



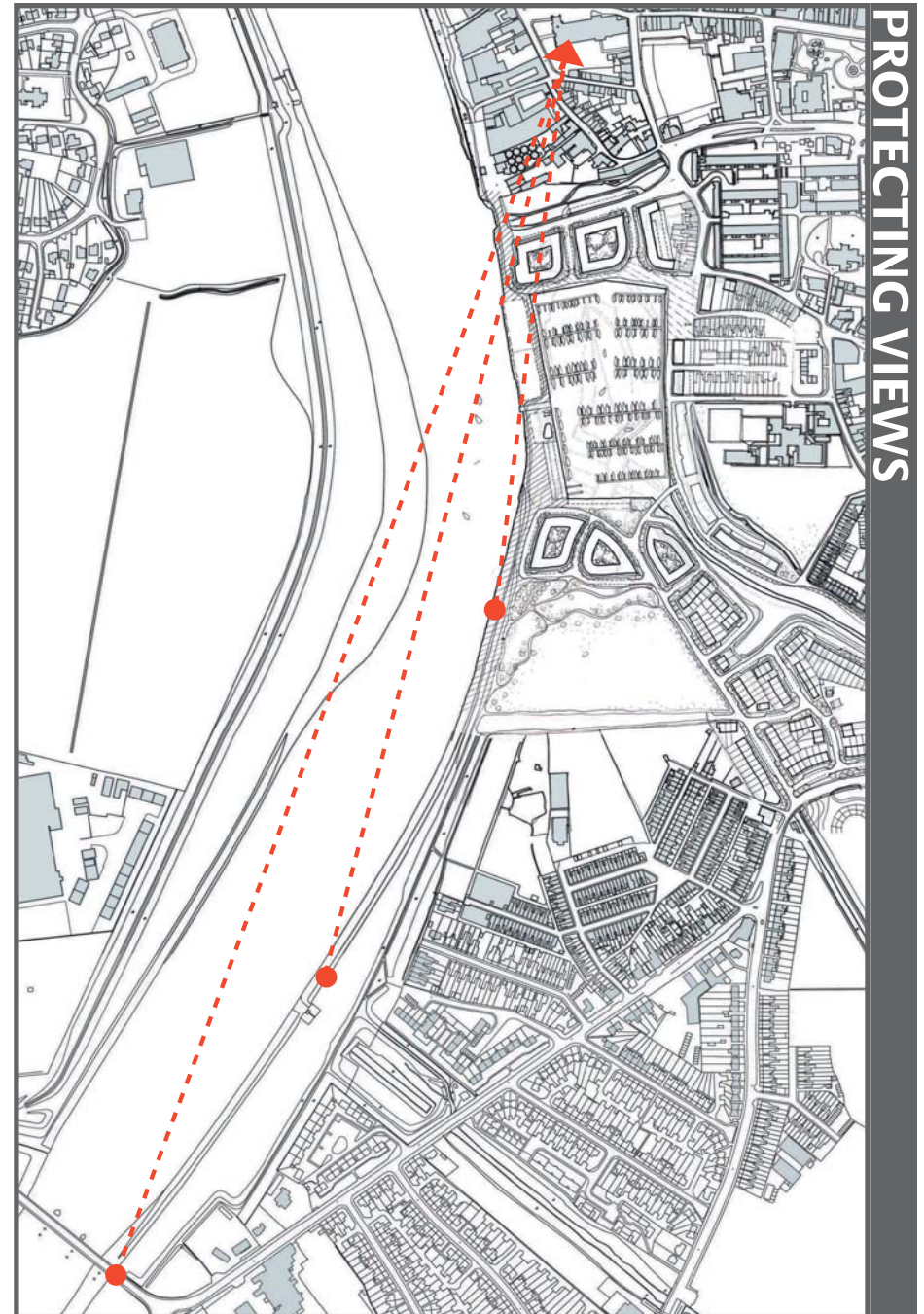
Protecting Views

There is a desire to protect views of historic Lynn. Specifically, views of St Margaret's Church from the Great Ouse road bridges and from the riverside walk beyond Boal Quay should be maintained.

Clearly, any building will impact on views. The challenge is to ensure that any negative impact is minimised, or to find compromises between the project's different objectives.

The diagram shows views to the church towers of two points along the river and from the bridge.

The two farthest view are unaffected, but the view from the Great Ouse path at Harding's Pits is partially blocked. Our initial analysis is that the height of block still leave some view of the towers, and is no higher than the grain silos behind. However, careful design and full analysis will be required at the detailed design stage.





Public Realm

A spatial hierarchy should be developed which clearly defines spaces within the development but which also provides for a fluid transition between these spaces. In doing so, the public realm must:

- Celebrate the riverside location of the development; introduce new tree lines to provide green links to and across the development, strengthen green links to the town centre & residential areas to the east.
- Improve pedestrian links across the site, including a new bridge over Nar; provide legible routes across the site for all transport modes thereby ensuring easy, efficient access to and around the site.

In terms of character, the development seeks to:

- Ensure that the open nature of the site is retained, whilst introducing a more formal structure in the northern part of the site to 'glue' the development into the town centre.
- Make reference to the history of Kings Lynn, the rivers Nar and Great Ouse in materials and spatial design.
- Ensure that the landscape places the pedestrian first by limiting vehicle access and by using shared surface spaces.

As well as streets, four key space types are identified: promenade, park, squares and courtyards (which are communal or private, as opposed to public). Examples are illustrated on the facing page.

Promenade

1. Intimate marina setting
2. High quality materials - essential to waterfront setting.
3. Waterfront access
4. Public art & wayfinding
5. Contemporary Material Contrasts
6. Simple waterfront treatment

Park

1. Park in an urban context
2. Wetlands
3. Meadow environment
4. Interpretation
5. Biodiversity
6. Sustainable Transport

Squares

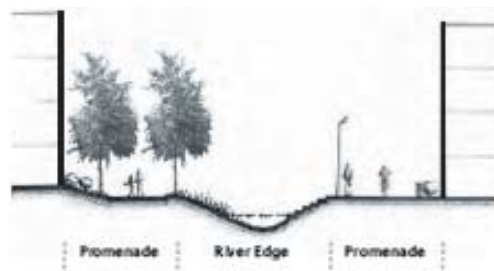
1. 'Spill' of uses into square
2. Contemporary design
3. Streetscape vibrancy
4. Light brings animation & safety by night

Courtyards

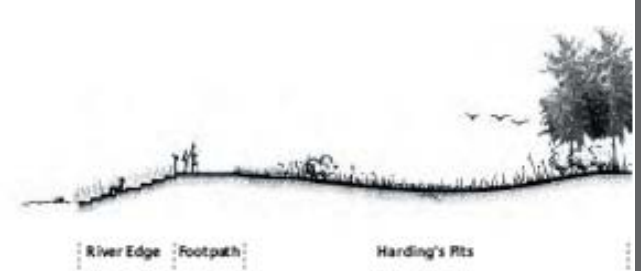
1. Dynamic green courtyards
2. Sculptural planting
3. Simple treatment of small spaces
4. Dramatic large scale elements



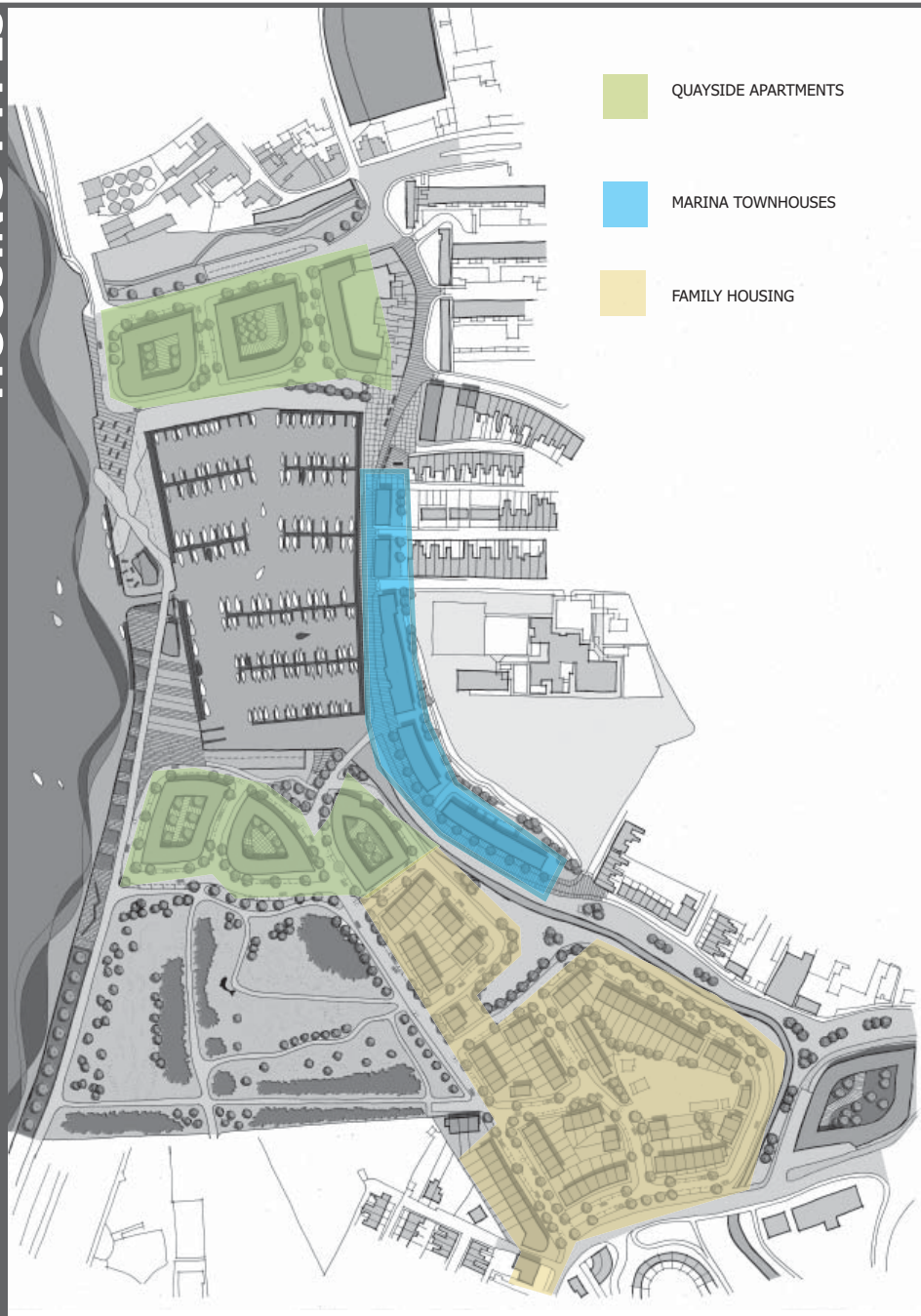
Section (Indicative): River Ouse adjacent to Marina



Section (Indicative): River Nar



Section (Indicative): River Ouse to Hardings Pits



Housing

This section outlines the three main housing types that the Master Plan proposes for Boal Quay.

Part of the development's rationale is to diversify the housing market offer in King's Lynn, so it is important to provide a mix, including a number of 'aspirational' and higher value apartments that are in short supply and demand for which is often created by a marina. Just as crucial, though, is the family housing that makes up most of the southern part of the site. In between these two contrasting typologies sit the 'marina townhouses' that link the marina to the Friars. Each of these types are described below and illustrated on the subsequent pages.

Family Housing

The aim here is to create a good quality, attractive and in many ways traditional residential neighbourhood, characterised by family houses. This neighbourhood provides the "tissue" that links the C19 and proposed C21 housing south of the site back into the marina and the town centre.

Housing takes the form of conventional short terraces of 2 and 2.5 storey, rising to 3 along Wisbech Road. Terraces should observe a consistent front building line, beyond which only bay windows and porches should project. Taking the lead from the existing neighbourhoods it relates to, parking is generally provided on-street, with the occasional garage also being appropriate.

Appropriate materials would be local brick, with slate or tile roofs and painted timber windows.

Quayside Apartments

Apartments are generally provided in the form of perimeter blocks. Units should be served by vertical

cores allowing arrangements of apartments that provide all living rooms on the external face of the block. All living rooms above ground floor to have useable balconies (2x2m or equivalent.)

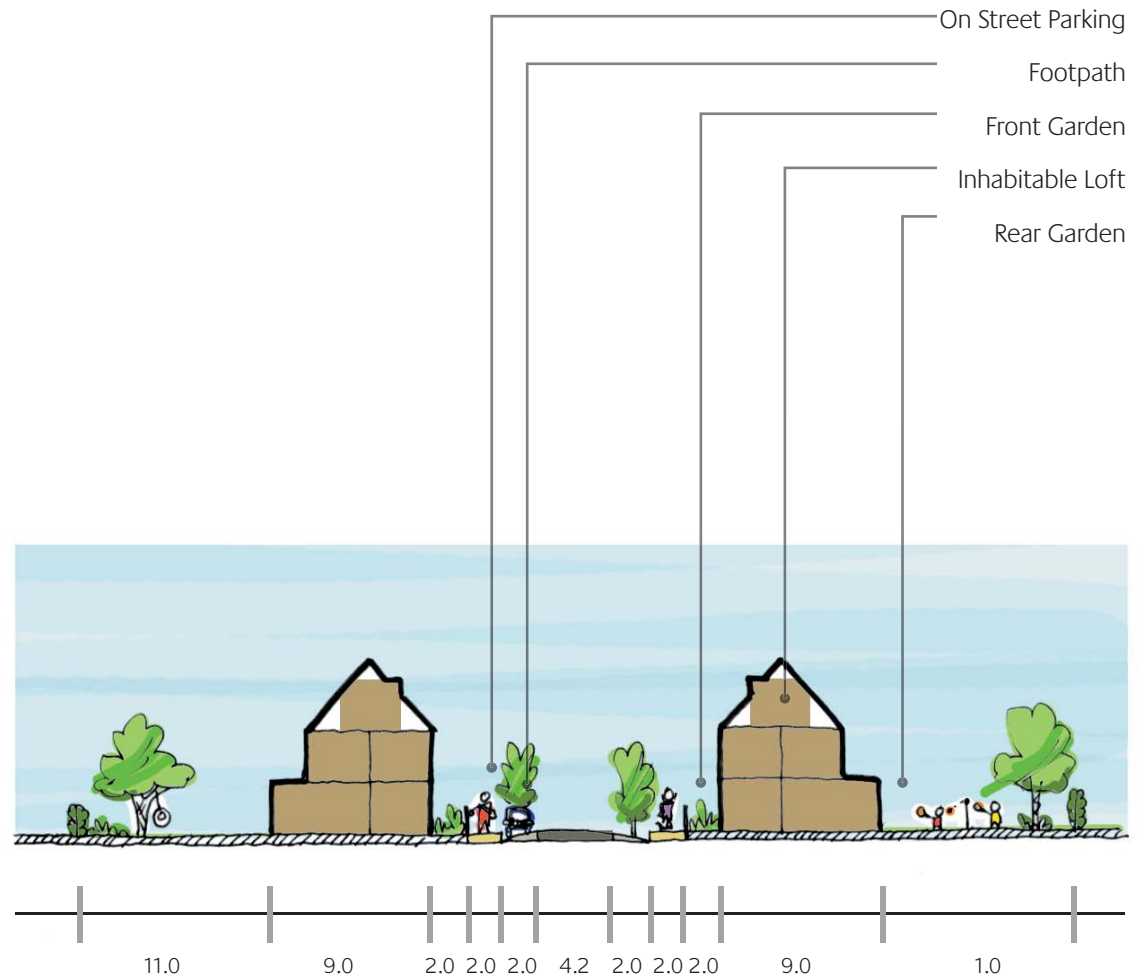
Blocks will generally be a mix of 1 and 2 bedroom apartments, but detail of mix to be market led and larger units may be appropriate. Parking is generally provided at grade within the perimeter block, with accessible deck over providing further amenity space to apartments.

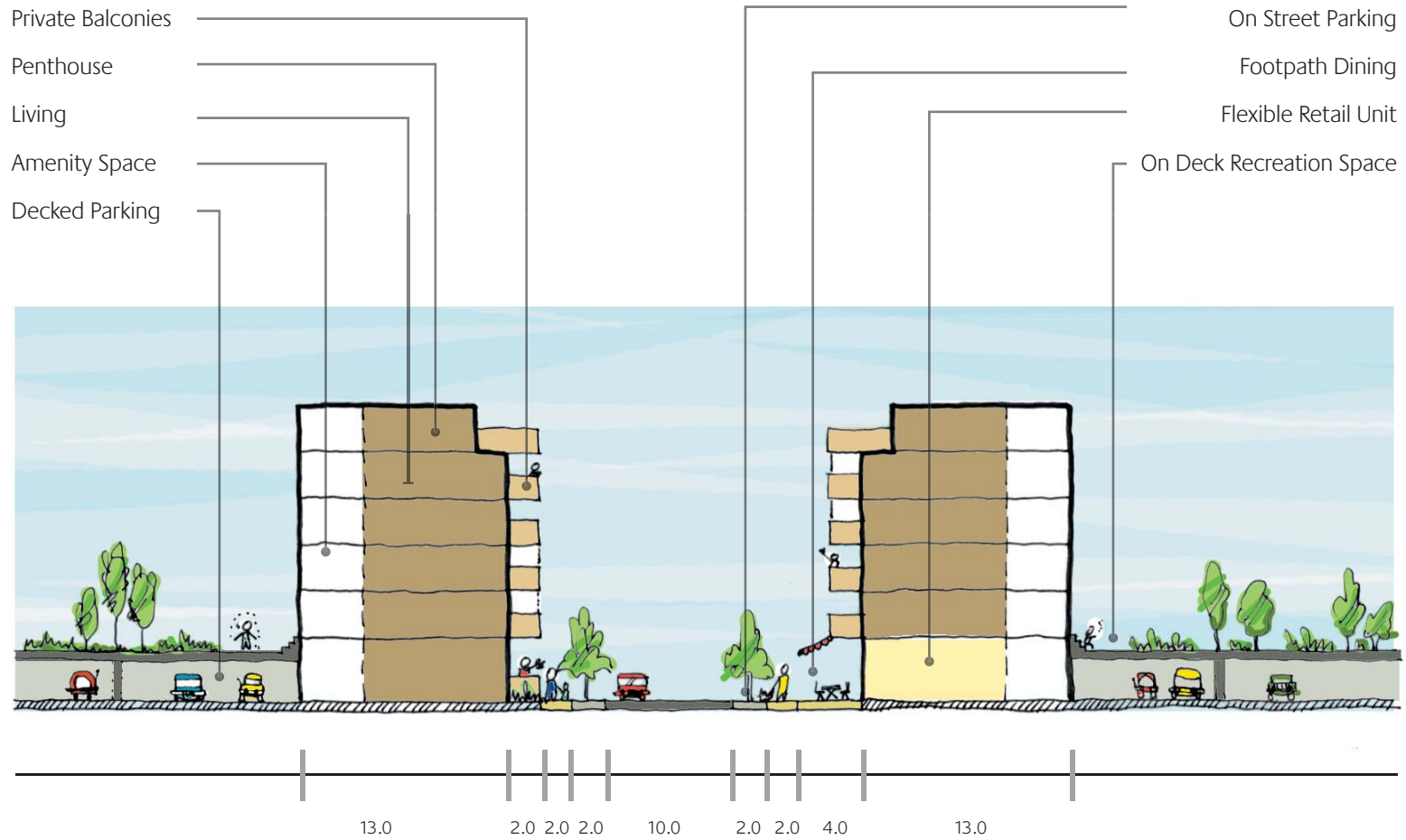
Blocks north of marina to have 4m floor-to-floor heights at ground level along the marina/quayside edge, to allow for commercial uses at ground level. Where the ground floor is residential this may be provided either as the lower part of a duplex apartment (not bedrooms) or occasionally as a small single unit.

Marina Townhouses

Housing around the marina and fronting the Nar aims to capitalise on the development potential of a marina environment, allowing river or marina views from as many homes as possible. It aims to create an environment with a contemporary, urban feel that is a natural extension of the existing quayside to the north. Architectural language should be contemporary with simple forms, generous glazing and balconies, roof terraces and shallow pitched or flat roofs.

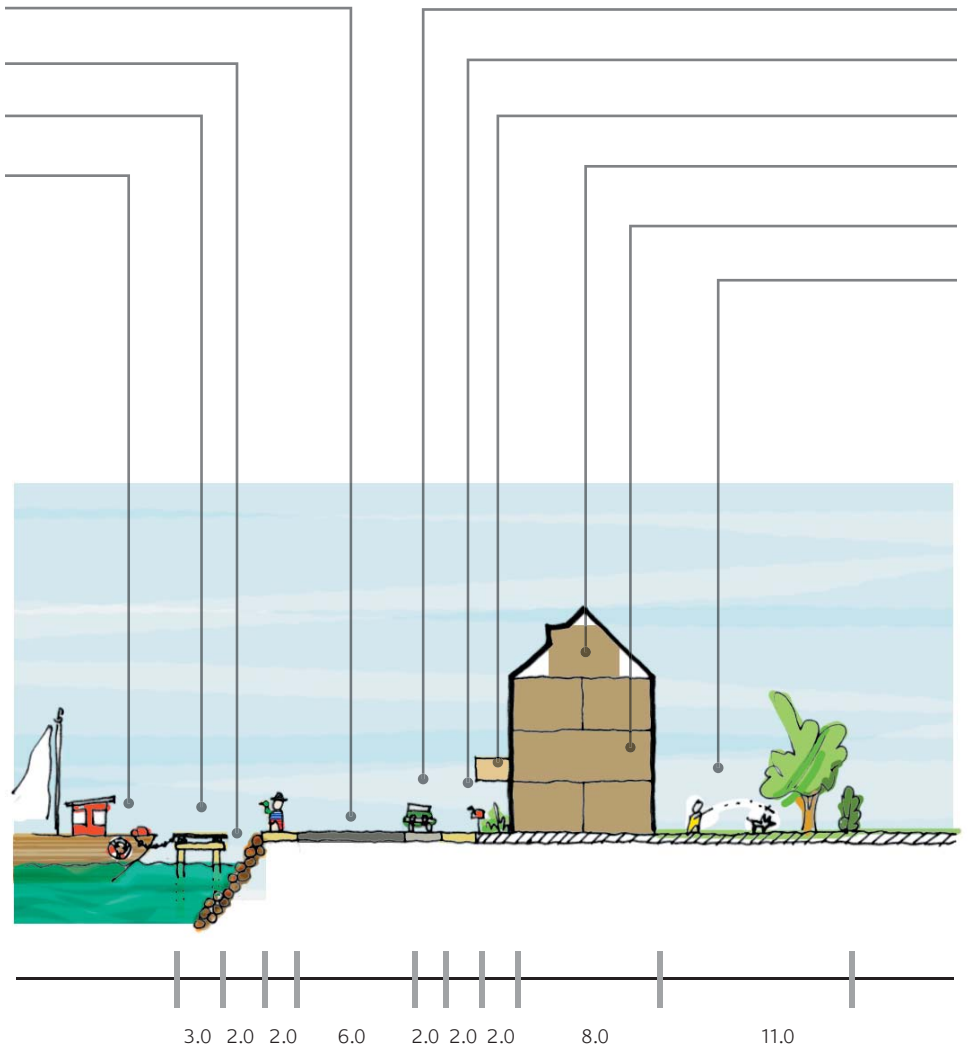
The houses should be 3 to 4 storey townhouses, fronting the marina or Nar with rear gardens backing onto existing development plots. Main living areas should be provided at first floor, with generous glazing and/or balconies. Parking should generally be provided on street, with integral garages avoided along the marina frontage.

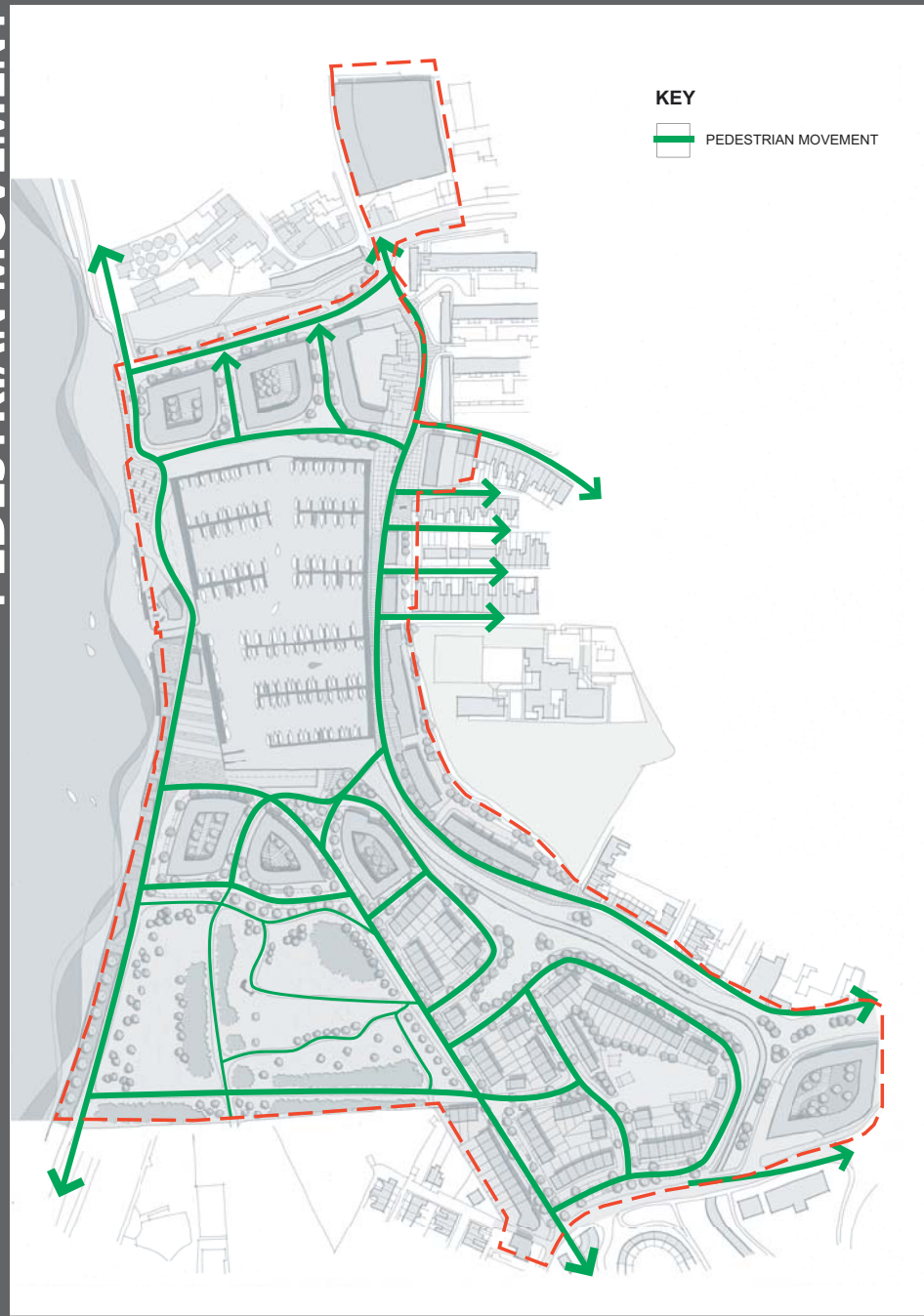




Shared Surface
Security Gap
Boardwalk
Marina

On Street Parking
Front Garden
Private Balcony
Inhabitable Loft
Living area capitalises on views
Rear Garden





Pedestrian Movement

Walking will be the principal way of moving about the site and, more than anything, all parts of the marina quarter will be a very pleasant pedestrian experience.

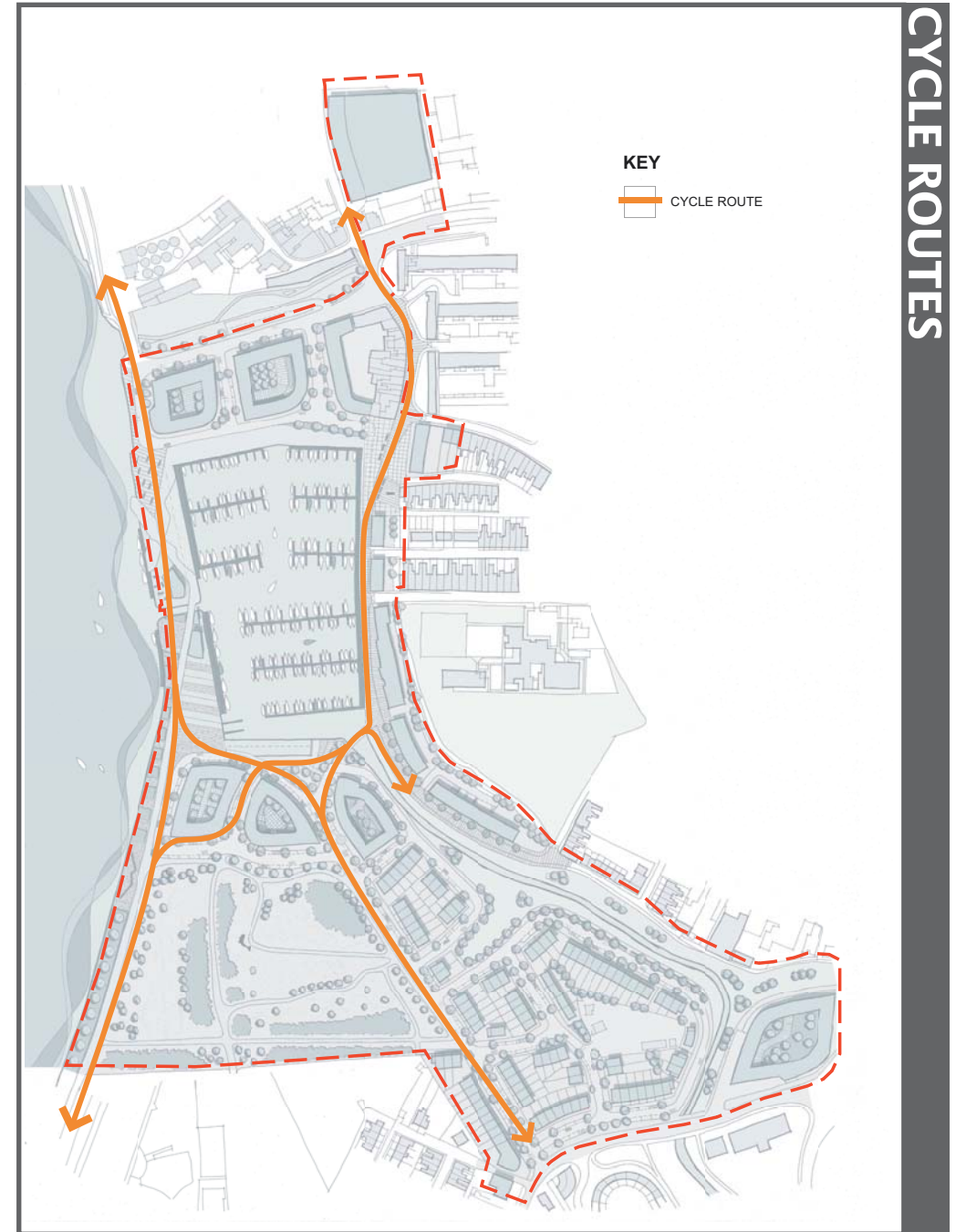
Free pedestrian access extends throughout the site, with particular emphasis on:

- 2 riverside walks (Great Ouse and Nar)
- access around the totality of the basin
- residential streets, which could be given the status of Home Zones or Play Streets.

Cycle Routes

Cycling is a mode of transport that the Urban Development Strategy and Local Transport Plan is promoting for King's Lynn, and the marina quarter plays its part in improving provision.

The cycle routes are a mix of shared with traffic (although in a separate lane or carriageway), such as on the former railway line, or with pedestrians, such as along the River Ouse (continuing the current arrangement).





Bus Route

A fast, reliable, attractive bus service from Nar Ouse, including a possible Park & Ride, to the town centre is important in reducing congestion and promoting sustainable forms of travel. London Road, the existing route into town from the south, is not suitable, so the route will need to pass through the marina quarter.

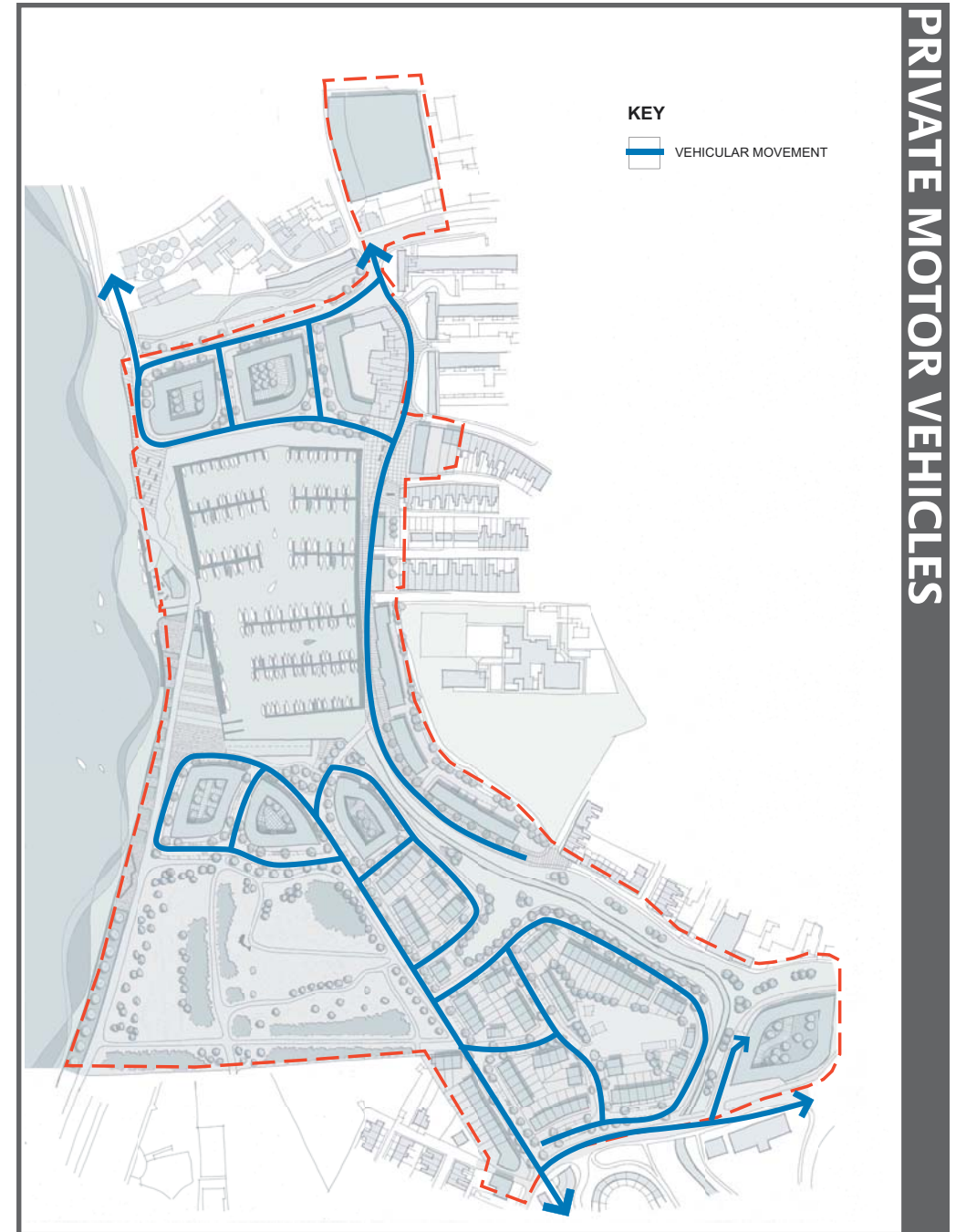
From the south, the bus route continues the line of the former railway, with a signalised junction with Wisbech Road to give buses priority, and continues to cross the new Nar bridge via bus gates to exclude private traffic. It then enters the existing highway network via the new street behind Bridge Street. It is envisaged that the buses will be able to enter and exit Boal Street without the need for any specific signalling or other infrastructure.

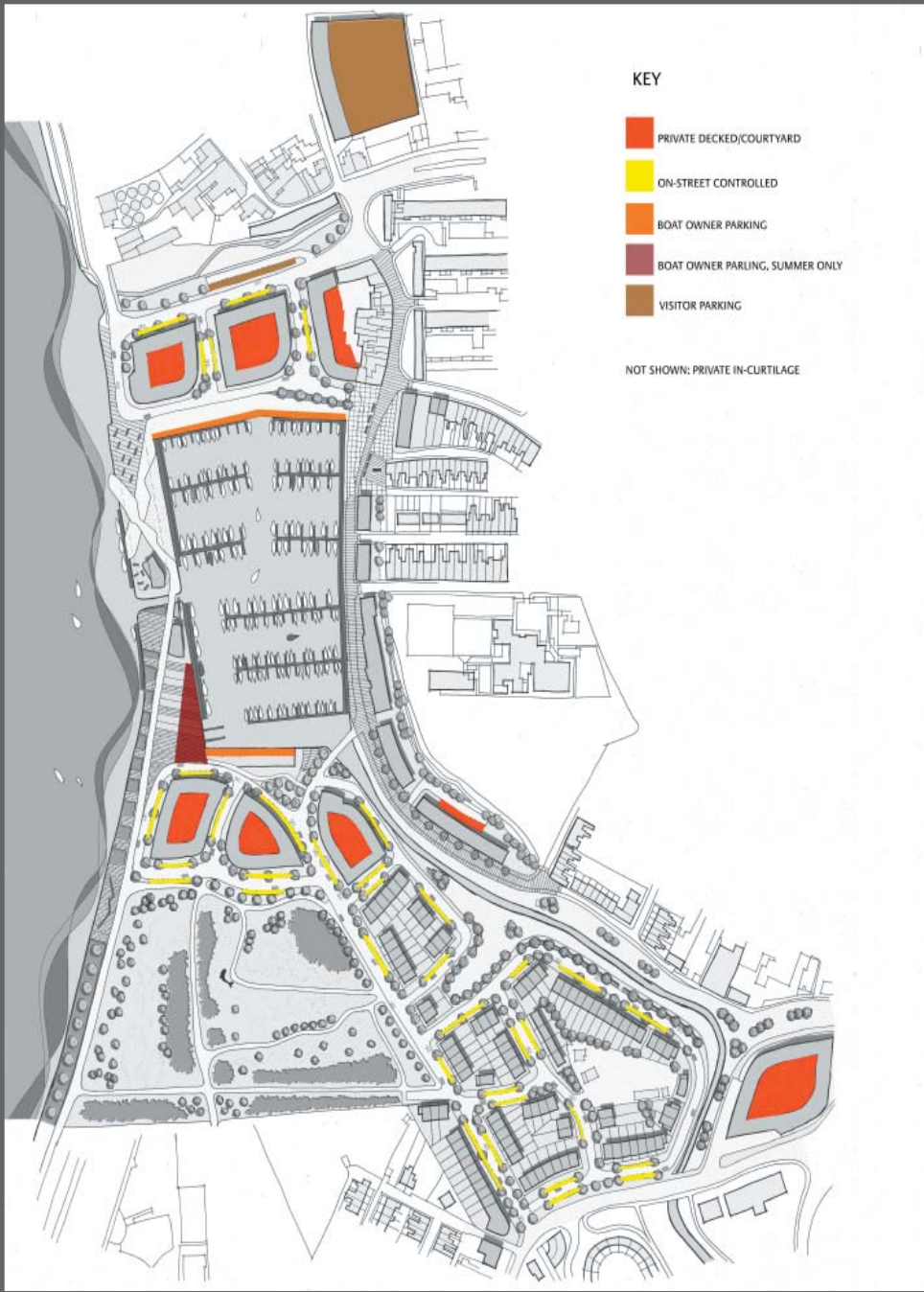
Where possible, the bus route follows new-built streets, rather than existing ones, some of which, particularly Bridge Street, are of historic value. This is not to say that bus movements are incompatible with or unsuitable for historic or existing streets, but it does mean that the new streets can be designed specifically with the needs of buses and their passengers in mind.

Private Motor Vehicles

It is important that the marina quarter and adjacent neighbourhoods, in particular the Friars, is protected from excessive car movement. This would have a serious negative impact on the way the place 'feels' and functions. For this reason, there is no through route traversing the site.

Access to the north of the site will be from Boal Street. The southern half will be accessed from Wisbech Road.





Parking

A mix of parking solutions are required for the site. The balance the needs of access with the requirement to use land efficiently and promote sustainable forms of transport.

The portfolio includes:

- a 680-capacity multi-storey visitor car park
- ground floor decked parking for flats and mixed-use blocks, plus some on-street
- a mix of in-curtilage and on-street for houses
- controlled parking schemes for the housing transition zone and, subject to consultation with residents, the Friars, to ensure supply for householders
- dedicated marina-side parking for boat owners, some of which will convert to boat storage in the winter
- parking provision at 1 space per flat and 1.5 spaces per house

Safety and Security

It is important that all development promotes safety and security without compromising quality of place. This is especially true of marina development, where boats and other property can be vulnerable. This means that marinas are often constructed to be somewhat remote, with high fences and defensive design. This cannot be allowed to happen at Boal Quay, as it would be contrary to the wider regeneration aims of the project and attempts to create a vibrant new urban quarter for King's Lynn.

The safety and security principles that will guide the development are presented below, divided between the marina and the housing/mixed use elements of the scheme.

Marina and related uses

There will be no security fence around the marina basin, but there will be:

- security gates at the limited number of bridge-heads, operated by swipe card or similar technology
- a 2 metre gap between the quayside and the walkways
- a fence erected around the over-wintering area in the appropriate season and removed in summer
- a permanent fence around the boat repair facility and fishing co-operative
- security presence with the marina management function
- good lighting and possibly CCTV

Housing and mixed use areas

The remainder of the development should follow the principles set out in the Home Office/Office of the Deputy Prime Minister publication *Safer Places*



(2005). In the Boal Quay context, this means:

- clear direct routes leading heading where people want to go
- all buildings facing onto streets and spaces, preferably with no rear access
- good lighting throughout
- no segregated pedestrian routes and alleyways
- cars that are not parked in-curtilage are within site of their owner's home

- expectations of high standards of maintenance
- lively, active spaces that provide a high level of natural surveillance, as illustrated in the sketch of the Carmelite Arch above.



Promoting Sustainability

Delivering truly sustainable communities requires early consideration of the key environmental, social and economic issues, and innovative approaches across all scales of planning and design. Design decisions made at master plan level have a major influence on the delivery of sustainability in the eventual developments projects. For example, the relationships between land uses, the mix and density of development, and the interface between buildings and their environment are key determinants for the level of sustainability that can be achieved in transport, the level of ecological integrity facilitated by the development, the viability of sustainable energy solutions, and much more. At the same time, sustainable development cannot be delivered at the master plan level alone, as many issues can only be finalised and resolved during detailed design.

As part of the Master Plan process for King's Lynn Marina, a number of key sustainable development issues and challenges relevant at this scale were identified. These issues became key drivers for the design, and are systematically addressed in the final master plan. Other issues (e.g. the specific renewable energy options to be included) cannot be finalised at this stage, but are nonetheless mentioned below as they become key considerations when moving beyond the master plan stage.

It should be noted that any additional technologies and infrastructure mentioned in this section have not been included in the current financial analysis of the master plan. The inclusion of such technologies can be costly, although some of this can often be offset through grant funding, through savings resulting from their inclusion, and by involving third parties such as ESCOs (where feasible). These considerations will need to form part of further detailed investigation following this master plan.

Socio-economic

The socio-economic sustainability of this part of King's Lynn has probably been *the* key factor driving the decision to commission a master plan for the area, and therefore has been a primary objective of the master plan process. The master plan aims to create a new, more vibrant, and more diverse community, with an economic base to match. It exploits the huge potential that this riverside location has to offer by establishing a 250-berth marina. The multiplier effect through all the associated uses, together with the image change this will bring, promises a new life and identity for this part of King's Lynn. The urban design approach further ensures that new development integrates seamlessly with the existing character of King's Lynn, making the most of what the area has to offer. All of this promises a more balanced community, with an improved ability to sustain itself now and in the future.

Energy and associated carbon emissions

Development within the King's Lynn Marina will lead to increased demand on utilities, especially in terms of existing energy and water provisions from the town and from the reinforced supply on the NORA site. However, on the energy side the existing supply can be supplemented with electricity derived from renewable and micro-renewable energy technologies.

In addition to the important role that sustainable energy solutions play in achieving the master plan goals for sustainable development, it will help to meet criteria set out in the Norfolk Structure Plan (1999), the (draft) Regional Spatial Strategy 'East of England Plan' (2004), and the Sustainable Development Framework for the East of England (2001), all of which show wide scale support for a move towards renewable energy options. Annex C of the (draft) East of England plan suggests the locational suitability of various renewable technologies, including solar photovoltaics, solar thermals, small wind technology (i.e., not wind turbine generators) turbines (and their variants), ground source heat pumps,



geothermal water heating and the use of locally-sourced biomass within CHP installations. Policy ENV8 in chapter 9 of the East of England Plan also encourages use of renewables in a move towards the region's energy self-sufficiency, and pledges a target of 14% renewable derived energy for the region by 2010, adopted under the regional sustainable development framework. The Norfolk structure plan further highlights that new developments will need to source alternative energy supplies from renewable sources and new development will need to be energy efficient, and that proposals for renewable energy projects will be supported.

An energy study undertaken for eastern counties (Bedfordshire, Buckinghamshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk), (Terence O'Rourke and ETSU, 1997) found that there exists a wide variety of renewable energy sources in Norfolk, where the greatest energy potential could be from plant based materials. The study noted that wind power was most relevant in Northern Norfolk but acknowledged that landscape designations may restrict opportunities for wind energy development.

Achieving significant reductions in the carbon footprint of development schemes, for reasons relating to efficiencies and economy of scale, become much more feasible with the application of community wide energy solutions. Although energy issues can only be finalised and resolved at detailed design stage, their eventual delivery demands careful consideration at the master plan stage. Detailed studies on the topic are beyond the scope of this master plan. Nonetheless, as part of our strategy for delivering a sustainable development, we have considered potential solutions for delivering the energy for the development by the most sustainable means possible, and have designed in a way that would allow for these solutions to be integrated in the next stages of planning. We suggest that this should become the subject of more detailed work to determine their viability as a follow on of this master

plan, and before any further detailed design work is undertaken. Key opportunities identified for further investigation include:

- In concept, the mix of uses and the scale of the development mean that the use of community based energy solutions are likely to be feasible. As this would open the door for larger scale technologies, such as larger scale combined heat and power (possible powered from Bio-fuel), larger scale PV/solar collectors, and wind energy, the potential benefits of such a scheme are enormous. Delivering this kind of scheme requires careful consideration and planning as part of the bulk infrastructure strategy, and therefore needs to be one of the key issues to be addressed in moving forward from this master plan into detailed design. Not only will such a scheme make an enormous contribution to the sustainability of the scheme, but also could mean savings in capital cost if an ESCO is involved (if found to be appropriate), and long terms cost savings for local communities due to the high levels of efficiency of these solutions. We would further argue that any strategies for sustainable energy (and water) supply should look beyond the master plan area to also include the new NORA development.
- As mentioned above, Combined Heat and Power (CHP), or tri-generation if possible, could be feasible in the case of King's Lynn Marina. This could bring significant carbon savings, especially if powered from renewable sources. Although CHP technologies could be applied at any scale, even at the level of individual residential units, larger systems generally deliver much greater savings, both in terms of carbon, and cost. Because of this, the first priority should be application at a community wide scale.
- The River Great Ouse and the proposed Marina are potential sources of heating and cooling, i.e. by using the temperature differential between air and water temperature in different times of year, a simple heat exchange process could be used to



provide heating and cooling for feeding into a community distribution system. The feasibility of such a solution, and its compatibility with solutions such as large scale CHP will, however, have to be carefully considered. Equally, ground source heating/cooling may be viable, but will need careful consideration and weighing up against other available options.

- Relatively good exposure of the site to the prevailing winds in the area makes wind power a possibility that should be considered, especially since this technology is delivering increasingly better value in terms of energy efficiency, payback periods, life cycle costs, etc. Again, larger turbines hold significant benefits over smaller turbines, and can feed into a community distribution network. Nonetheless, wind turbines are sometimes contentious, so any further work needs to carefully consider potential impacts such as the visual effects, shadow flicker, noise, and bird strikes. There is evidence to suggest that new designs in wind turbines, such as the helical turbines, are more popular than the traditional blades. Small-scale helical turbines for incorporation into businesses/domestic dwellings may also be less obtrusive and landscape sensitive than ground mounted turbines, and may be favoured in terms of landscape protection. Nonetheless, because of the higher efficiencies (and thus value) achieved with larger turbines, these should not be discounted without serious further consideration.
- A system of solar collectors could provide an alternative source of heat, which could be used for hot water and/or space heating. A system of collectors situated on various building rooftops is one possibility that could be considered. With technological improvements in evacuated tube systems, solar collectors are becoming increasingly feasible in the UK. Again, however, it will need careful weighing up against other available

options, such as CHP. An alternative option would be the use of PV cells, even though its commercial viability is often questioned in the UK context at current prices.

Movement and transport

The sustainability of transport and movement is an essential element and prerequisite for a sustainable community, and one of the key sustainability issues that need to be delivered at the master plan level. For this reason, the achievement of sustainable transport solutions has been a key aim of this master plan from the outset. The design proposals clearly give preference to more sustainable modes of transport, including walking, cycling and public transport, over the use of the private car. This is achieved by designing with a clear emphasis on pedestrian, cycling and public transport routes to make these the natural modes of choice for moving around in the development and beyond. Lower parking standards, and restricted access then helps to discourage the use of the private car for shorter journeys.

Ecology and biodiversity

The master plan actively seeks to achieve maximum ecological connectivity within the master plan area, stitched into a wider network of ecologically relevant open space. Within the master plan area, the Harding's Pits Park, which already has a local nature conservation designation, will remain unaffected by development. Any improvements to the park proposed during detailed design should very clearly be aimed at protecting and enhancing its ecological value and its role within a wider network of spaces, whilst also improving its amenity value.

The master plan further embraces the corridor along the River Nar as a key ecological asset that provides an important link beyond the master plan area, and should therefore be protected from intrusion by



development. It also provides an important setting for a key pedestrian route through the area, and thus contributes to the unique character.

Under the master plan proposals the River Nar and the Harding's Pits Park are separated by an area of residential development. However, the network of private gardens will ensure maximum ecological connection between these two key assets. This link can be further strengthened by including as standard the use of green roofs for all buildings within this area. By applying these measures the master plan can, despite proposing the development of what is currently largely undeveloped land, help to enhance the ecology and biodiversity of the area.

Green roofs

Green roofs were mentioned above as part of a strategy for maximising ecological value under the master plan proposals. However, it is worth noting that this is but one of the many benefits from these systems; in addition to the biodiversity benefits, they can help to reduce surface runoff by as much as 90% through water retention and evaporation. They also help to improve the insulation of the buildings on which they are installed, thus increasing the energy efficiency of these buildings, and will actually help to manage air pollution in the area by removing pollutants from the air.

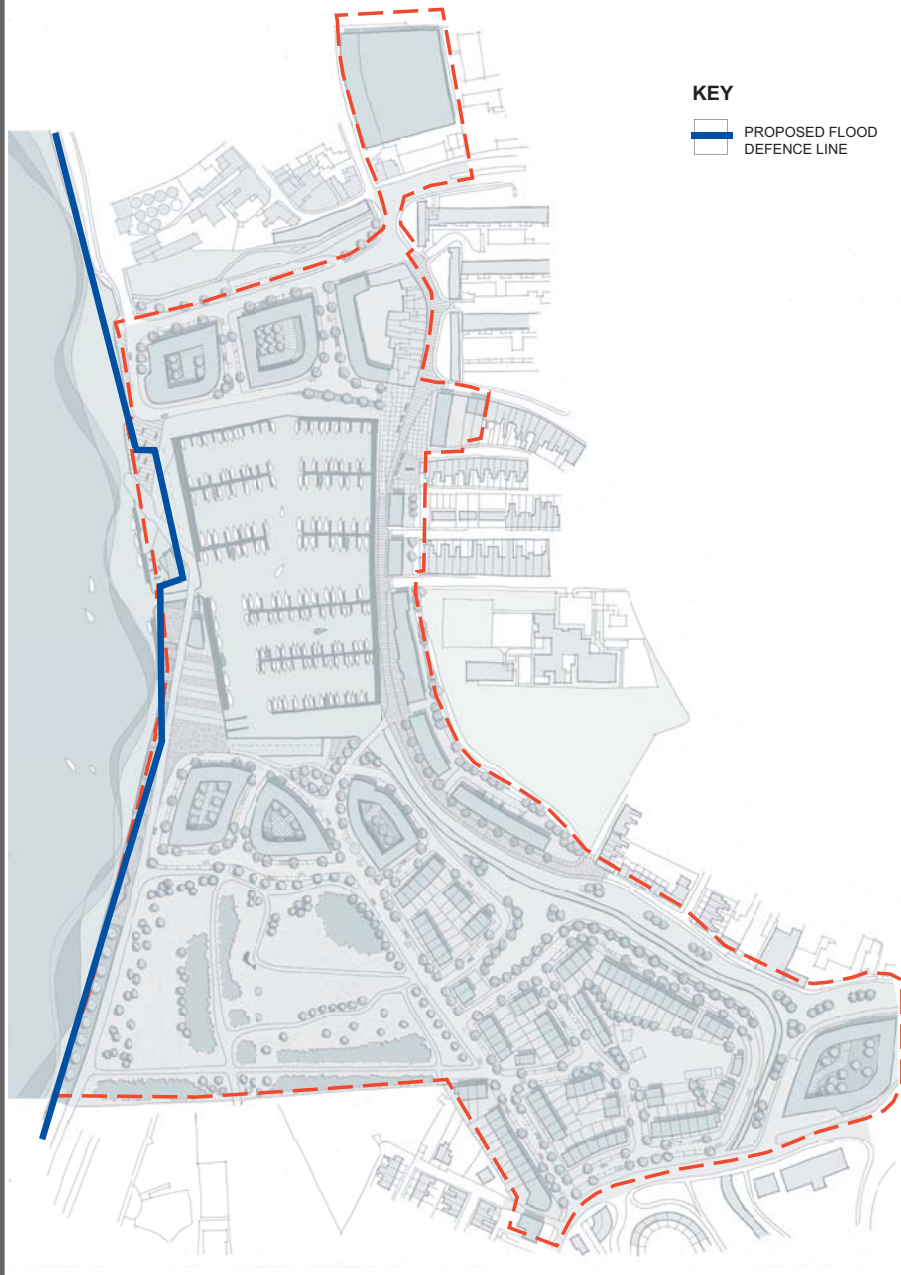
Sustainable design and construction

Sustainable communities have to rely on truly sustainable buildings. This requires consideration of the full range of environmental, social and economic factors in the demolition, design and construction of the buildings that will eventually form part of the development. This is largely a detailed design issue that cannot be resolved at the master plan stage. Nonetheless, it is important to recognise

this as a clear goal very early on in order to make sure that it is carried forward in the next phases of design and construction. Achieving a Code for sustainable Homes Level 3 is now mandatory for all new residential units. However, we believe much more can be achieved in this instance, and therefore recommend the adoption of a higher target. We also recommend the adoption of a target of 'Excellent' BREEAM ratings in the appropriate categories for all other buildings. By focusing on issues such as sustainable forms of transport, sustainable energy solutions and such like, the master plan provides the basis for this to be achieved.

Water management

Drainage, flood mitigation and other water issues are discussed in more detail elsewhere in this document. In this section, the need to incorporate measures for managing surface runoff is identified. At this stage, no specific work has been undertaken to assess the feasibility of measures and techniques for achieving this. It is recommended that, together with the further energy work referred to above, the application of SUDS techniques should be the topic of a detailed study to follow on this master plan, and before any further detailed design of the scheme is pursued. Together with the objectives discussed in the following section, we recommend that the ultimate aim should be to achieve runoff rates and quality from this area that are comparable to what it would have been under Greenfield conditions. Although ambitious, this goal is achievable if incorporated in the design from early on. In terms of the master plan, the recommendation for use of green roofs provides an essential first step for achieving this.



Mitigating Flood Risk

There are two main mechanisms for flooding within the development area, associated with the River Great Ouse and the River Nar.

The Great Ouse is tidal, and extreme water levels arise through a combination of tidal elevation, wind and storm surge, and freshwater flow. The present flood defence provision on the eastern bank of the Great Ouse generally follows the river edge. A notable exception to this is in the vicinity of the Nar mouth, where the defence line deviates to the east of the Nar loop, bisecting the development area. The master plan has been developed assuming that this defence line is to be re-established westwards to follow the main river edge, incorporating the lock gates and retaining structures at a level at (and above) the crest of the existing defence structures.

Potential flooding from the River Nar channel is also governed by the tidal condition in the Great Ouse. At periods of high tide, the sluices between the Nar and Gt. Ouse are closed, and water is retained within the Nar river channel, constrained by flood defence embankments through the development area. The proposed adjustment of the Nar water level through the NORA site area reduces the attenuation capacity of the system, but this is offset by the creation of the marina basin, with edge structures set to the same level as the Nar defences. The attenuation capacity of the lower Nar is not therefore reduced by the combined NORA and Marina developments. However, the transformation of both sites from grassland to surfaced and built environments has potential to accelerate run-off to the river system, unless attenuated through SuDs systems. The NORA development has considered the provision of wet/dry swale areas but, equally, such additional flow can be over-pumped from the Nar to the Great Ouse channel and the Marina master plan therefore allows for the provision of a pumping station within the lock and sluice structures on the western side of the marina

basin. Flood relief within the Nar channel is also attenuated by the discharge of flood water to the FRC via the FDC. Maintenance of the FDC is therefore an important component in mitigating flood risk, and the potential future development of navigation along this waterway would further enhance the discharge capacity to the FDC.

Clearly, the realignment of the Gt. Ouse defence line, and over-pumping from the Nar, potentially reduces the overall capacity of the tidal Ouse. This is unlikely to be significant in terms of overall defence provision.

Measures to attenuate surface water discharge from the development area, through landscaping and drainage design, should be incorporated where practicable.

The assumptions for building heights with regard to mitigating flood risk are as follows:

- 1 in 100 year flood level of the River Nar, which poses a greater risk than the Great Ouse): 3.15m above ordnance datum (AOD)
- all roads > 3.75m AOD
- dwelling thresholds > 4.15mm AOD

Development levels throughout the site are typically above 5m AOD, although there are some areas where levels may need to be raised.

Overcoming Environmental and Infrastructure Constraints

Implementation of the master plan generates, through construction and occupancy, a number of clear effects with both human and nature conservation sensitivities.

Human issues include traffic, noise, vibration, air quality, green space (terrestrial ecology) and flood risk (as addressed elsewhere in the master plan). The design context - massing, parking provision and opportunities for Green travel (bus provision) – will seek to attenuate potential impacts arising from the new community, while recognising the social and economic benefits from the development.

In tandem, the development must address three key natural environmental issues, namely water quality, freshwater ecology (River Nar) and marine ecology/ornithology (The Wash)

Water Quality

Water is integral within the development. The area is bisected by the River Nar and abuts the Great Ouse. Water quality management during construction and operational phases will be crucial. Staff and boat users of the marina must follow good practice guidance, including the Environment Agency's Pollution Prevention Guidance No 14 for marinas and craft and the RYA and Yacht Haven Association Guidelines to avoid contamination of the water body. Pump-shore facilities, dedicated fuelling berth and waste management facilities, as well as provision of interception and appropriate pollution control measures for boat maintenance, will be required. For the main site area, any discharges to the Nar should be via appropriate pollution control

measures to prevent transmission of contaminants from land areas into watercourses.

Clearly, maintenance of high standards of water quality in the Nar will be a prerequisite for consent. The operating regime in the Nar will be altered by the development, with potentially reduced periods of static water in the lower reaches. The regime should be managed to minimize back flow, to ensure that water from the development area does not re-enter the SSSI.

The marina lies well outside the limits of the Wash and North Norfolk coast SPA areas. Nevertheless, it will be necessary to assess the potential for disturbance to the habitat and designated features through increased levels of activity and, to a lesser extent, through potential impacts on water quality. The intent is that the marina serves both inland and marine boating areas, so the effects are unlikely to be associated with the entire marina fleet. The assessment of construction costs has assumed that a proportion of the recent deposition in the Nar loop shall be deposited to a marine site in the Wash. The EIA process will need to assess the implications of sure activity, both in terms of the dispersal of sediment and the movement of dredging craft.

Utilities

There are issues surrounding the provision of utilities, although it is anticipated that these can and will be addressed at the same time as those relating to the Nar Ouse development.

Specifically, NORA has to provide reinforcement for electric supply (new primary substation), gas and foul (two new pumping stations), and it is expected that Boal Quay scheme can also exploit this infrastructure.

Further investigation is needed.

4 Implementation

Development appraisal

The approach has been to identify “scheme wide” costs that would be incurred in the creation of the Marina and associated development sites. These costs are largely incurred in the early stages of the development, although, where possible, assumptions of phasing have been made to mitigate their immediate impact.

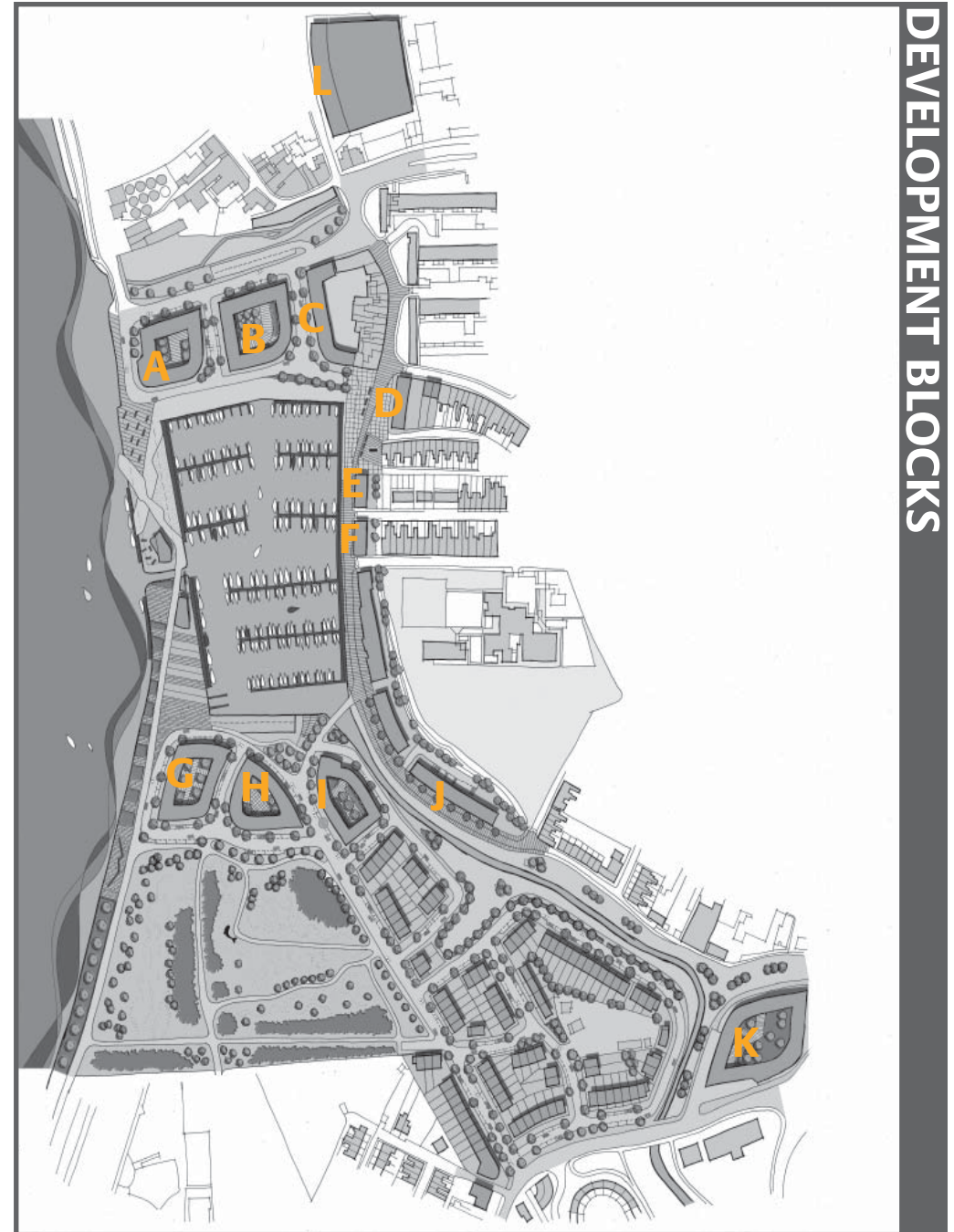
The remediation and infrastructure costs used within the appraisal have been provided by Sense while Royal Haskoning have advised on marina capital and revenue costs and estimated income.

Land assembly costs have also been included in the “scheme wide” costs category. BCKL&WN have held some preliminary negotiations with the owners of land included within the masterplan, but these are, in the main, not well advanced. We have, therefore, made a number of assumptions about the cost of required sites and, at this stage, have assumed an even phasing of cost over the first four years of the project. No cost for relocating the fishing co-operative is included.

Other costs are as shown. Allowances have been made for various fees and associated costs, including a contingency.

Each development parcel has been appraised as a single entity, reflecting values and costs specific to each parcel. The outcome of this exercise is an estimated receipt for each parcel which is then included in the cashflow.

The layout and volume of development has been translated into the floor areas by applying the average unit size, which is 65 sq. ft, to the number of



units set out in the table. This has been taken to be a gross internal floor area. For apartments, a net: gross ratio of 85% has been assumed.

Affordable housing is assumed to comprise 25% of the total. This is also assumed to be cash neutral, so there is no cost to the project but, by the same token, there is no receipt either. In due course, a developer may be able to secure a receipt from an RSL.

The approach to unit values is that this development will create a new market in King’s Lynn, the consequence of which is that a level of value that is considerably higher than has been the case to date in the town will be achieved. Because of the scheme’s unique nature, there are no comparables in Kings Lynn from which to discern a trend in values.

The only new development of apartments of any note that could be considered comparable is “Yours”, the Morston scheme at South Lynn. Morston have achieved values to date from £159 per sq. ft. to £198 per sq. ft. for units of comparable size, averaging £180 per sq. ft. for the 9 sold so far. Larger units are heavily discounted, with 3 bedroom units netting approximately £145 per sq. ft.

There is anecdotal evidence that new developments that benefit from an adjacency to water will command values of around 20-25% higher than the trend in values established for non waterside properties. There is no evidence to substantiate this in King’s Lynn but, as referred to above, the Marina development will create a new quality benchmark in the town. As a consequence, we have assumed the values achievable are as set out in table 1 below.

The build costs also shown in table 1 reflect the higher quality likely to be required in the more prominent areas within the overall development. Again, we have taken the build costs applicable to “Yours” as a guide to those likely to apply to the Marina.

Table 1: Estimated values and costs

Parcels	Price(£ per sq. ft.)	Build Cost(£ per sq. ft. on gross area)
A, B, C, D, E, F, G	225	100
H, I, J, K	200	90
L, Houses	180	90

Within each parcel specific appraisal, other standard development costs have been assumed as follows:-

- Contingency at 3% of build cost.
- Professional fees at 10% of build cost.
- Section 106 costs of £7,500 per unit.
- Allowances for planning and acquisition costs.
- Agents and legal fees for sale, along with similar fees for lettings where appropriate.
- The total cost for external works around the development has been apportioned to the development parcels pro-rata to number of units for private sale in each parcel.

An assumption of phasing of development has been made. The estimated receipt from each development parcel is shown in the full appraisal supplied to BCKL&WN. The broad assumption is the private sale of 50 apartments and 30 houses per year is appropriate for the King’s Lynn market.

The appraisal also reflects anticipated receipts from serviced, remediated, developable land that adjoins or is close to the new Marina.

Excluded from the appraisal is site L on the masterplan. This means that the multi storey car park is developed outside of the core scheme. Also excluded is the development between sites F and J, for which planning permission has recently been granted.

The outcome of the appraisal, on the basis of all the information described above, is a net present value of minus £13.6m.

Delivery

We have also considered the options open to Borough Council of King's Lynn & West Norfolk in delivering the Marina.

Clearly, the net present value of the scheme will deter the private sector from delivering the scheme unless some form of public sector financial support is available.

We have considered whether the scheme will be attractive to the market. Even with public sector funding input, the private sector may be concerned at the scale and ground breaking nature of the development. Our view however is that an opportunity exists here to create a prestigious, landmark development, of a type that rarely becomes available. The larger developers are familiar with and are prepared to undertake developments such as this, particularly where they can do so in partnership with the public sector who to an extent provide insulation from the inherently unviable nature of a scheme that involves such high infrastructure and associated costs.

A market testing exercise amongst the major national development sector could be undertaken to assess likely interest in the scheme.

The private sector is an attractive delivery option because it will bring value engineering, financing and project management skills to the delivery of the scheme, as well as market facing knowledge. The public sector may not have the capacity or experience to procure the "site wide element" of this development.

If it was felt the private sector represents the optimum delivery mechanism, BCKL&WN and their stakeholders can manage the selection of a developer in a robust way, ensuring that the terms of appointment mirror their requirements and outputs

from the scheme. It also enables BCKL&WN to create the framework for their ongoing involvement as an active participant in the whole process of development, marketing, tenant vetting, subsequent disposal and ongoing estate management. If established and managed in the correct manner, this is a process that will allow BCKL&WN to ensure their objectives and also those of their stakeholders are met at the Marina. The process and principles would be similar to those being followed in the negotiations over the residential development agreement with Morston.

BCKL&WN can seek a developer to enter a development agreement requiring the successful party to perform the following functions:-

- (i) To procure off-site and site wide infrastructure using the work already commissioned by BCKL&WN as a clear guide to what is required. However, BCKL&WN should be open minded to initiatives and variations that eliminate, reduce or defray some of the costs currently envisaged.
- (ii) To provide an alternative masterplan if, in the view of the selected developer, the plan already prepared does not maximise the potential of the site and could be improved upon.
- (iii) To propose a phasing plan for the development.
- (iv) To recommend a strategy for developing the various parcels.
- (v) To market the scheme.
- (vi) To fund the development, through the provision of interim finance and institutional finance for freehold investments if appropriate.
- (vii) To ensure an estate management system is established in a manner compatible with the management regime appropriate to the Marina.

(viii) To develop the Marina in a logical, sustainable manner, reflecting demand, viability and the principles of good estate management.

(ix) To participate in a relationship with BCKL&WN that involves the full engagement of BCKL&WN in fundamental decisions relating to the prosperity, well being and future sustainability of the Marina.

The process of selection of developer must ensure the market is fully tested, which will enable BCKL&WN to appoint a developer who performs the role described above and who satisfies the following criteria:-

(i) Understands the issues and challenges involved in bringing forward a development centred around Marina use.

(ii) Has relevant experience of this type of Marina development.

(iii) Is prepared to be patient in bringing forward a scheme that meets BCKL&WN's quality aspirations but with an appreciation of the other complementary facilities that may be required.

(iv) Has access to sufficient funds to develop speculatively and is prepared to do so in accordance with BCKL&WN's requirements.

(v) The selected developer will also demonstrate the ability to value engineer the provision of principal and secondary infrastructure, reducing the burden on the scheme. This is a selection criteria that can be very easily quantified. BCKL&WN can invite offers from developers for the amount of public sector funding they require to create the Marina and their skills in value engineering will reflect in the offer received. BCKL&WN will, of course, look favourably on the lowest proposal

but all the same will rigorously test the assumptions made to ensure no dilution of the quality of the Marina environment or that development is hindered for instance by insufficient provision of infrastructure.

(vi) Prospective developer partners could also be invited to submit their proposals for developing the infrastructure, including suggested timescales and phasing, with accompanying cash flow projections. Developers will be required to demonstrate a clear understanding of the triggers for infrastructure and whether elements of infrastructure should precede or succeed development take up.

(vii) As part of the bidding process to become selected developer, developers will be invited to submit proposals for minimum land value, i.e. the figure below which BCKL&WN are not obliged to approve a proposed development. This process tests the developer's confidence of achieving levels of value in excess of those current prevailing in the town as well as his ability to control costs, necessary to propose an attractive minimum land value.

(viii) Also, part of the bidding process will be developer's profit requirement for each aspect of the development. These may be different, on the basis that there is a combination of commercial and residential development.

(ix) Less easy to quantify, but equally essential is the ability of the preferred developer to persuade BCKL&WN and it's stakeholders that they are the party in whom BCKL&WN should place their confidence that the Marina will be delivered in the manner required. There are well established marketing and selection processes to allow the public sector to chose the appropriate partner with whom to enter into a development agreement.

Having appointed a developer and having entered into a development agreement, there will be a number of trigger points and performance standards that will ensure the developer is achieving the objects of BCKL&WN and their stakeholders in an acceptable manner.

The advantages to BCKL&WN in a conventional development agreement are as follows:

- The risk is transferred to the developer, in terms of sales and letting voids, reduction in capital values during the development period and overrun on costs on the same period.
- The financial contribution of BCKL&WN is capped.
- Any overage can be shared between the parties, if values and costs are greater than and less than originally forecast respectively.
- BCKL&WN construct an agreement in which they retain the level of involvement and level of influence they require.
- BCKL&WN can demonstrate best value through the competitive tendering of developer's profit requirement and minimum land value.
- BCKL&WN also benefit from the value engineering and project management skills of the private sector, particularly in terms of infrastructure.

As an immediate first step, partners should seek to secure an outline planning application for the scheme. This will give a degree of certainty to the development industry and help in the search for a development partner.

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Annex: Summary of Economic Impact Analysis Study

Introduction

This annex provides an assessment of the impacts and benefits to the local and East of England economies of the potential development of a marina at Boal Quay, King's Lynn. The potential effects of such a marina derive from: its direct employment; employment within the commercial accommodation; employment generated within the area by related boater and visitor spend; and, possible effects on inward investment. The analysis is based upon the (former) ODPM '3Rs' guidance and seeks to identify the net additional impacts of the facility taking account of deadweight, displacement and spin-off multiplier effects.

Three options for the development are considered:

Option 1: A 90 berth marina in Boal Quay with no boat yard and storage and a mixed use development, including a 60 bed hotel, 1,040 sq. m of A3 floorspace and 1,790 sq. m of retail.

Option 2: A 250 berth marina at Boal Quay with boat yard and storage and a mixed use development, including a 60 bed hotel, 1,040 sq. m of A3 floorspace and 1,790 sq. m of retail. **This is the option presented in the master plan.**

Option 3: A 250 berth marina at Boal Quay with no boat yard and storage and a mixed use development, including a 60 bed hotel, 1,040 sq. m of A3 floorspace and 1,790 sq. m of retail.

The Economic Development Policy Context

The development would contribute to a number of high level national and regional goals, including:

the PSA target to “Improve the productivity of the tourism, creative and leisure industries.....”; and the RES objectives in relation to investment, renaissance and regeneration of the region’s communities and developing culture, heritage and leisure assets, as well as the goal to make the most of the region’s gateways to the sea. The RES identifies King’s Lynn as both a priority regeneration area and a key service centre. The development would also accord with the approach of the Regional Spatial Strategy which recognises the town’s challenges and advocates developments which will promote King’s Lynn as “the primary retail, leisure and cultural centre”.

At a more local level the marina development and the creation of a waterway along the River Nar represent a key component of the Nar Ouse Regeneration Area scheme. The development of Boal Quay also has a central place within the Borough Regeneration Strategy, the Local Plan and the Tourism Strategy.

The Socio Economic and Property Market Contexts

The King’s Lynn Expansion scheme of the 1960s and early 1970s helped the town develop from a port to a manufacturing town. Population growth has remained high in recent years but employment growth has been relatively slow. Distribution hotels and restaurants is the second largest employer after the public sector, indicating the importance of tourism and leisure to the local economy.

Economic activity rates in the Borough are relatively high with unemployment low. However, average earnings are well below the regional and national averages. Educational and workforce qualifications are also below average and 11 of the Borough’s 87 neighbourhoods fall within the 10% most deprived nationally.

House prices have risen strongly in recent years, although the rate of growth has now slowed. The

market for retail units is also reportedly strong, although vacancy rates are relatively high.

Demand for office accommodation is currently mainly local and development interest and supply have been limited. Rentals for premium property amount to only around £8 per sq ft.

The stock of industrial floorspace is ageing and demand again is largely local. Rentals typically lie in the range £2 -£4 per sq ft.

Marinas and Economic Development

Surprisingly little empirical research is available on the impacts of marinas on economic development.

Ex-ante studies funded through EU programmes provide a variety of projected revenue generation and impact estimates and highlight the role of marinas in relation to tourism, generation of spend by boat owners and contribution to the quality of life.

Ex-post studies indicate that a 400 berth Marina in Pwhelli is likely to have generated over 280 jobs. An older study of a marina in Ramsgate suggested job creation of 170.

The Potential Demands for Marina Facilities and Employment Land at Boal Quay

A study by DTZ Pieda assessed the viability of the marina and associated property development. It argues that, whilst much of the wider market is saturated, Boal Quay can unlock pent up demand. An earlier assessment by Babtie suggested that 100 permanent berth holders could be attracted. Research on three case studies has identified a number of significant lessons.

In a number of respects the DTZ and Babtie studies appear optimistic but neither identify the scale of demand – 200 to 300 berths – apparently sought by potential operators. However, the consultations were notably more positive about this potential.

The DTZ appraisal is positive about a range of aspects of the potential demand for property, in particular apartments, restaurants/bars and small retail units – although not a hotel.

Boating Use and Impacts

The South East and East of England have relatively high levels of boating activity. The demand for moorings is strong and charges appear to be rising. On the reasonable assumption that sufficient demand is likely to exist, the employment impacts of the direct operation of the marina and boater spend at local (Borough of King’s Lynn and West Norfolk) and regional (East of England) level will be as set out in Table ES1 below.

Table ES.1 Direct Employment and Employment Associated with Boater Expenditure

	Local Impacts			Regional Impacts		
	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Direct Employment	4	10	10	2	5	5
Employment Associated with Boater Spend	10	32	27	5	14	13
Total	14	42	37	7	19	18

Source: ECOTEC Analysis

Commercial Elements

The estimated employment associated with the commercial elements – assuming that a hotel development proves successful – would be set out in Table ES2 below.

Table ES.2 Employment Generated by Commercial Floorspace

Type of Floorspace	Local impacts	Regional Impacts
	All options	All options
Retail	19	13
A3	37	31
Hotel	14	8
Total	72	58

Source: ECOTEC Analysis

Wider Visitor Impacts

Domestic visitor numbers to the sub-region have been falling in recent years, although levels of spend have shown a modest increase.

Table ES3 shows the projected impacts of the options on employment associated with visitor spend based upon high and low assumptions for effects on visitor numbers.

Table ES.3 Employment Generated by Visitor Spend

	Local impacts			Regional Impacts		
	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Total Employment Generated (FTE's) - visitors	5 – 9	23 – 44	23 – 44	3 – 7	17 – 33	17 – 33
Total including Multiplier	5 – 10	25 – 48	25 – 48	5 – 9	23 – 46	23 – 46

Source: ECOTEC Analysis

Wider Investment Impacts

King's Lynn has attracted little in terms of foreign inward investment in recent years. Whilst no real data is available, investment from other parts of the UK appears also to have been limited. Whilst the area performs strongly on factors such as costs, land availability and some aspects of quality of life, it is perceived as inaccessible and the skills base is limited – as is the 'lifestyle' offer, the one real aspect which the marina development could help to address.

Table ES4 provides our – inevitably tentative – estimates of the potential employment impacts of the development through its wider effects on attracting inward investment.

Table ES.4 Impact on Inward Investment Employment from the Proposed Marina Development at King's Lynn

Option	Net additional jobs
Option 1 (King's Lynn average – low growth)	13-27
Option 1 (Average of King's Lynn and county averages – high growth)	48-97
Option 2 and 3 (King's Lynn average – low growth)	27-40
Option 2 and 3 (Average of King's Lynn and county averages – high growth)	97-145

Source: ECOTEC Analysis

Overall Impact Analysis

On the basis of the analysis the overall employment and GVA impacts of the options under consideration will be as set out in Table ES5 below.

Table ES.5 Overall Employment and GVA Impacts

	Local Impacts			Regional Impacts		
	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Total Net Employment	128-216	223-362	168-290	84-169	130-257	109-229
GVA	4.4 - 8.2	7.1 - 13.1	6.9 - 12.9	3.5 - 7.3	5.4 - 11.4	5.4 - 11.4

Source: ECOTEC Analysis

Sources of Funding

Much of the development would clearly be privately funded. The most promising potential sources of public funding are :

- EEDA’s Regional Renaissance Programme;
- English Partnerships Regional Funds;
- Environment Agency Waterways Plan (Great Ouse).