CREWE HUB STATION
CAMPUS DESIGN AND MASTERPLAN

Confidential - Feasibility report - February 2018

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CAMPUS DESIGN AND MASTERPLAN
FEASIBILITY REPORT

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1.0 - INTRODUCTION

This 'RIBA Stage One - Feasibility Report' captures the output from the first stage of the integrated study work which has been undertaken by Mott MacDonald, Grimshaw, CBRE and KPMG (the "design team") on behalf of Cheshire East Council (CEC) and Network Rail (NR) to develop proposals for a transformational station masterplan and enhanced station design at Crewe Hub Campus.

The design teams work documented here has been developed during an initial twelve week Feasibility Stage and in the context of this early stage of design development, this report is considered interim for review and preliminary comment. It is anticipated that the masterplan and station design will be further developed in the subsequent Options and Solutions stages of work to follow.

This Crewe Hub Station Campus Integrated Project (the "Project") was initiated in October 2017. CEC has commissioned a number of workstreams to assess the planning and design of Crewe Station and its surrounding area, and to identify how preferred options can be funded, financed, and delivered. The three workstreams are:

Crewe Hub Station Campus Design and Masterplan –
This is the subject of this report. Led by Network Rail Infrastructure Projects, with Mott MacDonald and Grimshaw: development of masterplan, station design and associated public realm and infrastructure design for the Crewe Campus area. This report does present unassured high level costing information that originates within the 'Funding and Financing Strategy' workstream.

Crewe Hub Station Campus Business Case and Revenues –
Not the subject of this report. Led by Mott MacDonald with CBRE: assessing a range of potential funding options for the project, including rail user revenues, station commercial revenues and land value capture.

Figure 1.1 - Integrated study key dates

Milestone	Date
Feasibility report	Feb '18
Commence option development	March '18
Preferred option selection	May '18
Option development report	June '18

Crewe Hub Station Funding and Financing Strategy –
Not the subject of this report. Led by KPMG: developing a financial model and assessing financing and delivery strategies for the Crewe Campus project. Mott MacDonald is also providing an integration role across the three workstreams.

Mott MacDonald is also providing an integration role across the three workstreams. The project is split into three stages (Feasibility Stage, Options Stage, Solutions Stage). The anticipated outputs of the feasibility stage 'Crewe Hub Station Campus Design and Masterplan' are detailed below. -

- A preferred shortlist of up to three station design and masterplan options for further development during the Options Stage
- Order of magnitude cost estimates for Crewe Campus elements developed during the feasibility stage
- Initial assessment of funding options for the identified Crewe Campus elements

The initial basis for the masterplan work undertaken here draws upon and further develops the June 2017 'Crewe HS2 Hub Framework & Masterplan Scenario Report v1.0' ("the CEC study").

Station and Masterplan – Shared objectives

The objective of this study is to develop a credible Crewe Hub Station Campus masterplan design solution that supports the future passenger demand from local and regional ambitions for connectivity and growth and the regeneration framework in the Crewe Masterplan. The subsequent stages of this study will require the provision of assurances needed by partners on the funding availability and programme deliverability. This is not included at this early stage.

In parallel, it is also the purpose of this work to develop an ambitious but affordable enhanced station proposition to support the opportunities and investments at the station campus at a sufficient level of analysis to enable the support of all partners.

1.1 - EXECUTIVE SUMMARY - A VISION FOR CREWE

Crewe station is a key transport hub in the north west of England, providing connectivity for passengers to all areas of the UK. Crewe is also one of the largest stations in the North West and a major interchange station on the West Coast Main Line. It currently has a direct service to London Euston, Edinburgh, Cardiff, Liverpool, Manchester, Birmingham, Glasgow, Derby, Stoke-on-Trent, Chester, Wrexham and Holyhead for the ferry connections to Dublin Port. Many other towns and cities also have railway connections to Crewe.

The arrival of HS2 in Crewe, supported by regional rail improvements, will help create great opportunities for investment and transformational regeneration around the station, the rest of Crewe and the wider region.

In October 2017, CEC published the 'Crewe HS2 Hub Draft Masterplan Vision' consultation document for the draft masterplan vision for Crewe HS2 Hub. This ambitious document sets the agenda for transformational growth for the town of Crewe. In November 2017, the Constellation Partnership submitted a draft Growth Strategy to Government setting out ambitious plans for South Cheshire and North Staffordshire and how it will support the growth ambitions of the North West, West Midlands and North Wales.

The arrival of HS2 train services to Crewe in 2027 provides the catalyst for significant and lasting change for the region. The vision for such a transformational masterplan is to provide lasting legacy outcomes which can unlock future capacities for the growth of jobs, homes and commercial space within the town. Commercially, the project seeks to develop total Gross Value Added figures of £2.9bn by 2043.

CEC believe that in order to facilitate this unprecedented growth, the design of the Crewe Campus masterplan must be founded on an HS2 train service strategy of 5-7 trains per hour on each side of the route with high speed services to London, Birmingham and Manchester. Without this rail service capacity, Crewe will not be able to achieve the unprecedented growth this once in a lifetime opportunity presents.

The conclusion of this initial stage of work is that three masterplans are recommended to be taken through to the next stage of feasibility design. Whist each of the three masterplans are founded on the key principles established by the CEC study, they each also look to develop a unique strategy and provide differing opportunities for development.

- **Masterplan 01: Two linked centres -** Further develops the concept of complimentary town centres as outlined in the CEC Study, which are linked along the west side of the railway viaduct.
- **Masterplan 02: New town centre** - Proposes the redevelopment of Crewe existing town centre with an intensification of residential uses and reserves it for local retail, businesses and services specifically for Crewe town. A new more regionally focused centre is created to the east of the new station development. There is also the potential to relocate some of the existing towns civic and public service buildings.
- **Masterplan 03: Two independent centres** - Two distinct town centres are formed, there is less emphasis on connectivity between the two centres than in the previous two masterplans with the belief that each will operate successfully in their own right.

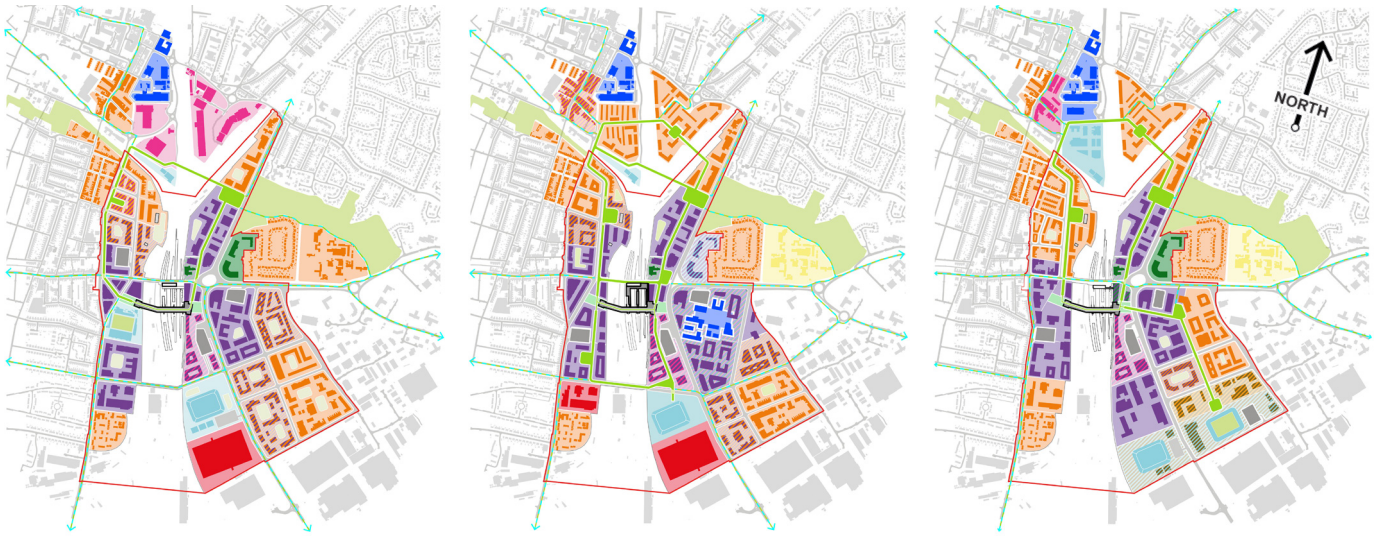
It can be seen that each of the masterplans can comfortably accommodate the projected levels of growth as determined by the CEC study. In fact, there is further opportunity for the development to achieve even more ambitious growth targets.

At the heart of each of the masterplans lies proposals for the redevelopment of Crewe station itself. The vision is for a redeveloped, enhanced and fully accessible Crewe station. A station which is not only an operationally efficient hub serving the town and region befitting the arrival of HS2, but also one that integrates and provides for the community and townscape as an intrinsically important piece of architecture and public space.

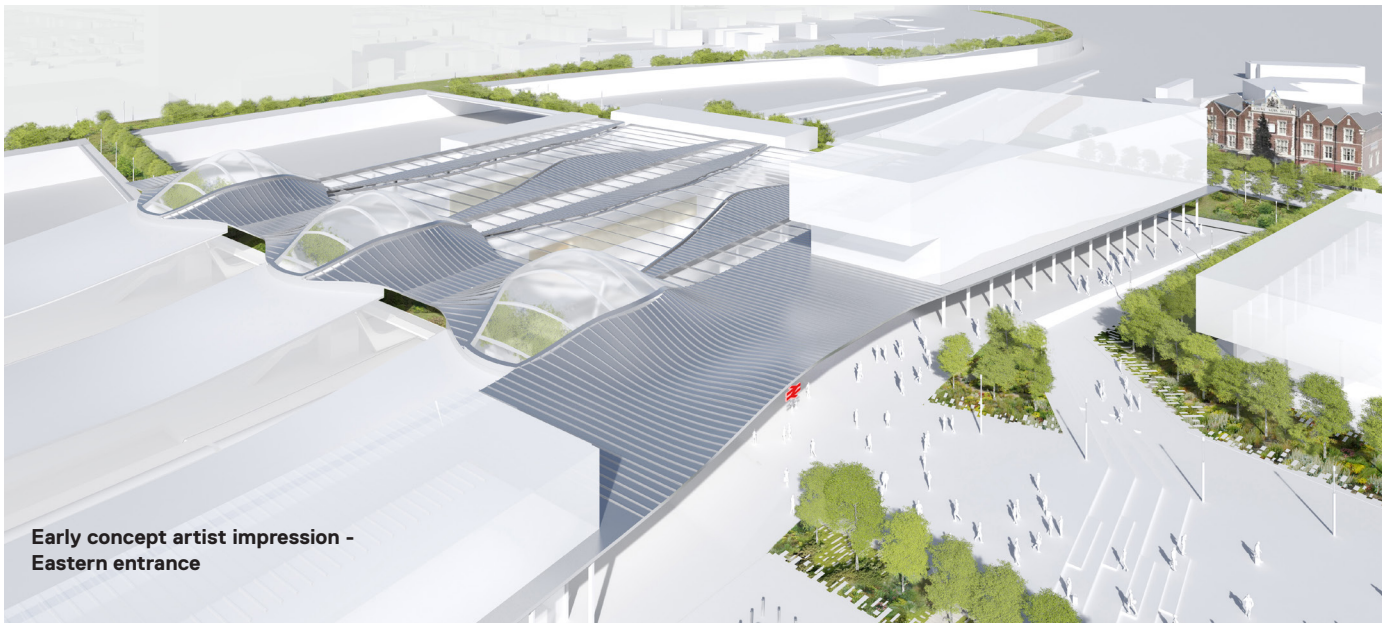
The work documented in this report illustrates the potential baseline of what could be achieved by the transformational masterplans. The study lays the foundations for the next stage of work, which will provide a greater focus on quantum, mix, value and costs of development and will ultimately result in refining the three masterplans down to one preferred option.

Successful completion of the design refinement will need to be supported by more detailed technical, commercial and financial analysis, wider strategies and Funding and Finance model to support the preferred solution, to be undertaken at the next stage.

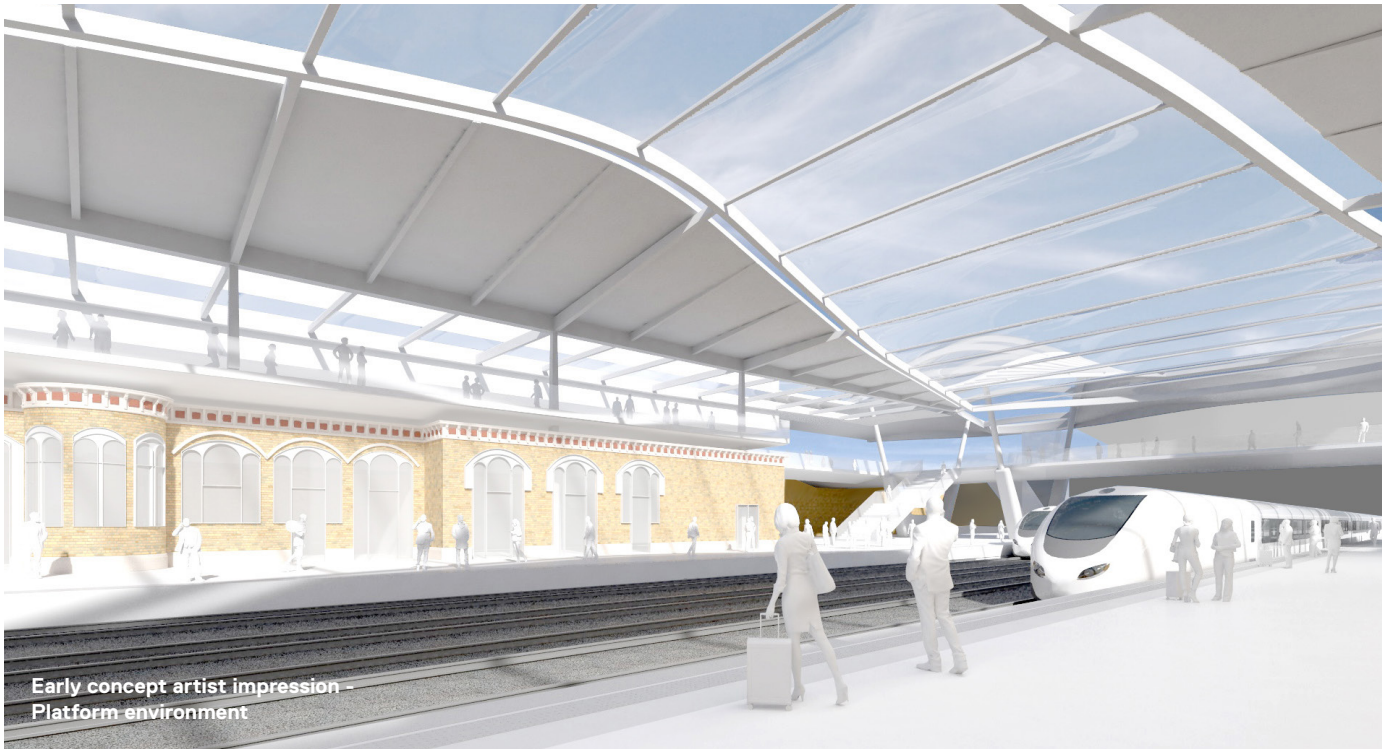
Figure 1.2 - Key outputs of the Campus Design and Masterplan Report



Masterplan 01 **Masterplan 02** **Masterplan 03**



Early concept artist impression - Eastern entrance



Early concept artist impression - Platform environment

1.2- THE PROCESS

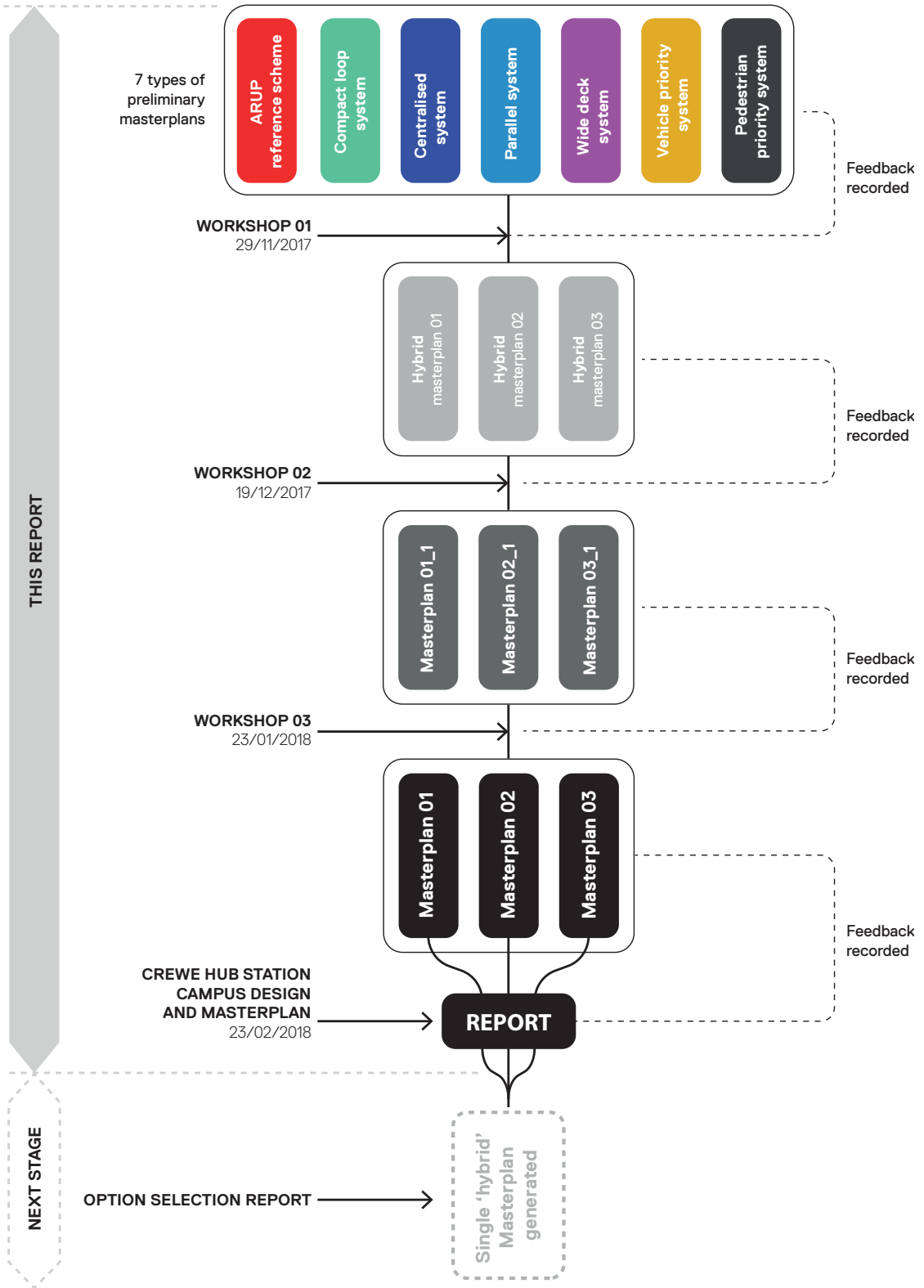
The feasibility stage was divided into three key stakeholder workshops. At each workshop the design team's work was presented and comment was invited from the key stakeholders and the design team in the room. This was an iterative process of recording comments and then refining the work for the next workshop. At each stage the masterplans gained more clarity and detail along with a more developed transport strategy. It is not to say that the three final solutions presented in this report are each an ideal solution. Given the complex nature of the stakeholders, level of the requirements received and also the stage of the design, rather than attempt to create one ideal solution, the process has been structured in such a way to provide three distinct solutions. Each solution has inherent positive and negative attributes that are to be compared and accessed in the next stage of work.

In the next stage of work the masterplans will be appraised against each other and a single, hybrid solution will sought that best encapsulates the desired vision for Crewe.

- **Workshop 01** - Seven masterplans were presented to the room, each looked at implementing alternative methods of structuring a masterplan. Transport planning was also introduced.
- **Workshop 02** – Using the comments and feedback recorded at the previous workshop, three hybrid masterplans were produced for comment. Transport planning work was further developed and a small design exercise undertaken to establish the feasibility of the southern link bridge. Further work is required on this subject.
- **Workshop 03** – Using the comments and feedback recorded at the previous workshop, three masterplans were produced for comment. The strategic transport planning aims were set out. Refer to the transport planning section (Chapter 4.0).
- **Post Workshop 03** – A final refinement of the masterplans was undertaken prior to the issuing of this report to capture the design and transport planning comments recorded in Workshop 03.

In the next stage of the design process the three masterplan solutions are to be accessed and appraised. The anticipated output of the next report will be the selection of a single hybrid masterplan.

Figure 1.3 - Workshop Process



1.3- CEC REQUIREMENTS

The consultation work undertaken to date in respect of the masterplan work has outlined the following specific requirements as received by CEC. Together with the assumptions, these form the basis of the brief required as defined by CEC to meet their principal objectives. It should be noted that at present the requirements are fairly non-specific in terms of the masterplan, but do set out some specific requirements in terms of how an enhanced station should interact with the masterplan.

At this stage, we do not believe there is anything presented with the initial requirements as noted below, that might preclude any aspect of the emerging masterplan and enhanced station designs we have currently developed.

As documented in the masterplan process section, the integrated and collaborative nature of the design development process has meant that an iterative process has been followed. Options have been presented at workshops, with feedback recorded and integrated into the designs. It is hoped and anticipated that a more detailed set of requirements can be developed within the next stage of design.

Section 1.6 outlines how the development quantum has been derived from the basis of the 2017 CEC study. The initial work undertaken has been based on the following key assumptions:

- 5-7 trains per hour each side of the route
- High growth scenario, informed by the Constellation Partnership work is to be incorporated
- The 2017 CEC Local Plan should be incorporated
- No ticket barriers are required, a ticket-less system is assumed to be place
- The new deck should be publicly accessible and span east to west across the rail corridor
- The station should be designed to be phased and delivered in sections
- The larger regional entrance is to be located on the east (Weston Road side) with the local entrance on the west (Gresty Road side)

Figure 1.4 - CEC requirements

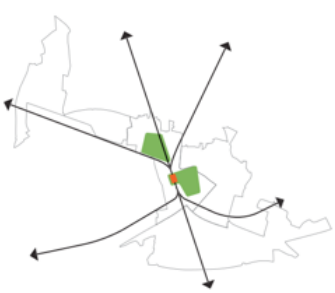
The station enhancement shall be complete by 2027 in line with the completion of phase 2a.	
The station leisure and retail offering shall not compete with the town centre	
The station shall give consideration to community space and offering. Not required in the form intended i.e. childcare, start-up etc as competing with town centre	
The station campus shall provide a soft link from east to west between the two sides of the town and through to the town centre.	
The station will provide permeability from east to west during station operation hours 00:00-06:00	
The station will give credence to the External Entrance Space (passenger arrival) with statement architecture as means to link to the town centre. Arrival is the priority for station experience but the ambience must also extend into the station	
The station East entrance shall link in with traffic flows into the station as a natural link from the A500 and have a functional nature. Both entrances must allow for vehicular and pedestrian entrance. It is practical to have direct vehicle access to the east entrance.	
The station west entrance shall lend itself more to pedestrian flows into the town centre and football ground and have a more intimate nature, acting as a pull into the town centre.	
Without prejudice to the core station requirements, car parking shall be provided to the South side of the station to ensure parity with traffic flows from the south side of the town.	
The station and campus shall give due consideration to small retail leisure amenities as the start of a coherent link to the town centre.	
The station and campus area should have clear wayfinding fitting of the nature of the area as described in above requirements.	

1.4- CEC - SEVEN KEY VISION MOVES

The Crewe HS2 Hub Framework and Masterplan scenario report sought to define the ambition of the masterplan with 'Seven key vision moves'. Each move is defined as below. This feasibility study looked to further define CEC requirements for the study by challenging these principles in the work presented at each workshop. In challenging each principle, the design team sought to either clarify what the intention was or if it was the correct approach - these are shown in red:

Figure 1.5 - Challenging the Seven Key Vision Moves

1



COMPLEMENTARY CENTRES

Two complementary centres, Crewe Town Centre & Crewe Hub, each provide a unique offer.

Should the town centre re-locate?

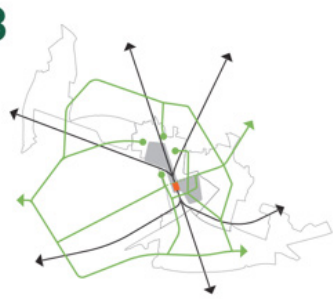
2

REINVIGORATE THE TOWN CENTRE

The Town Centre is revived with additional cultural, leisure and mixed residential uses.

Should the existing town centre re-focus as a residential area?

3

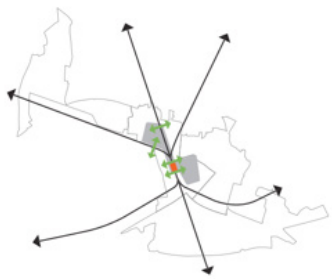


RATIONALISE THE ROAD HIERARCHY

The transformed movement network allows easy access to and from the station, while reducing vehicular traffic in the town.

Is the southern link bridge the correct solution?

4

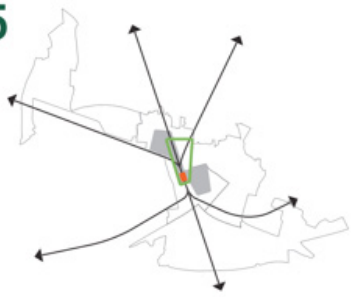


IMPROVE PERMEABILITY OF THE RAIL CORRIDORS

Permeability through railway corridors is improved using new and updated infrastructure.

Is this for pedestrians, vehicles or both modes?

5



CREATE CLEAR LINKS BETWEEN TOWN & STATION

The Town Centre and Crewe Hub is connected with enhanced, multi-modal routes and provides improved connectivity to the countryside.

Is a rapid transit loop the right answer?

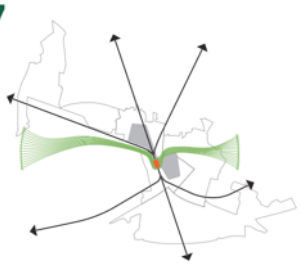
6

LINK NEIGHBOURHOODS, ASSETS & CENTRES VIA AN INTEGRATED GREEN NETWORK

Existing and new pieces of open space are better linked with streets and routes to create an integrated green network east to west and north to south.

What is the correct way to link Crewe with the station?

7



UNIFY THE STATION & TOWN WITH THE CHESHIRE LANDSCAPE

Landscape is drawn into the centre of Crewe to provide amenity, improve the perception of the town and support value increases; it also creates opportunities for residents to connect to the wider area.

How is the Cheshire landscape defined and how can it manifest in the masterplan?

1.5- MASTERPLAN BOUNDARY

The boundary of the study was defined prior to the commencement of the feasibility study and was captured in two zones, a red-line boundary and a green-line boundary. The study was structured in such a way to allow for a different level of detail to be used in the wider context as opposed to the area immediately around the station.

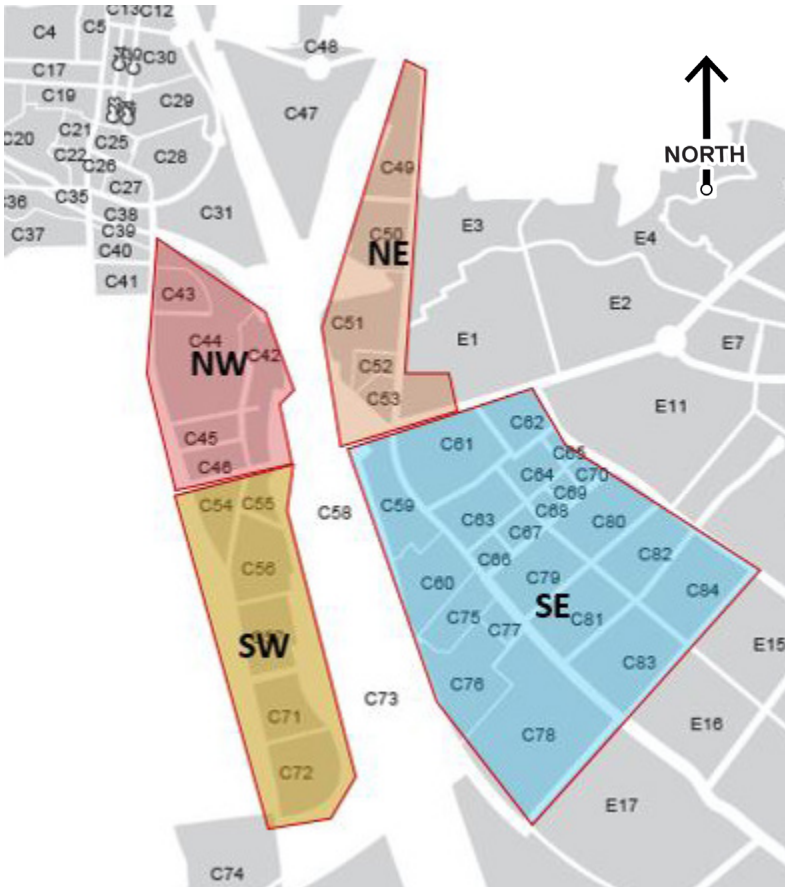
The red-line boundary is a 125 hectare site centred on the station at the heart of urban Crewe. The red-line borders, but does not include the existing town centre. However, the red-line boundary does include the railway corridor that is currently not being considered for over site development. Removing this land from the total, results in an approximate 100 hectares of developable land within the red-line.

The green-line boundary is approximately a 44 hectare region focused on the station and its relationship with the heart of the campus development. Within this region a greater level of detail is required.

1.6 - DEVELOPMENT QUANTUM

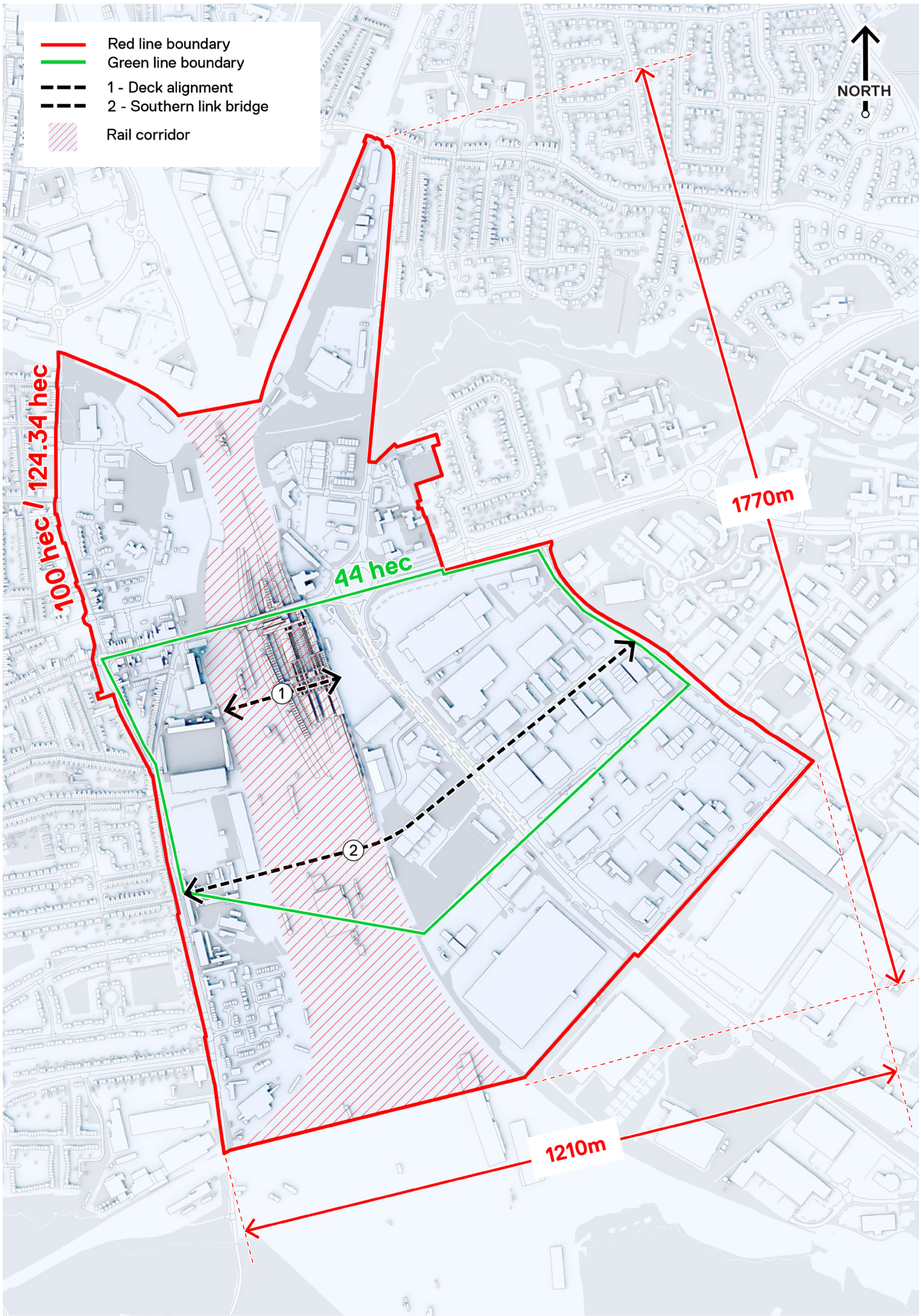
A baseline for the amount of development around the station has been established in the CEC study. However, the scope of the 'central masterplan area' (CMA) and the 'Crewe Campus red-line boundary' require alignment. This has been done by selecting the parcels of that are common to both scopes as shown in the diagram below. The table adjacent details the gross development quantum for each development type. These figures are considered a baseline that should be challenged and tested further.

Figure 1.6 - Development quantum conversion



Type	Crewe Campus
Commercial	335,795
Residential	248,005
Retail	54,863
Light industrial	5,985
Green space	23,076
Car parkng land	50,251
Total	**737,060**

Image 1.7 - Constraints



2.1 - WHAT WILL CREWE BE LIKE IN 2050?

It was the purpose of Workshop 1 to try and ascertain how a future Crewe station and town might function. To this end, four existing UK towns which have had varying degrees of rail investment were presented as potential precedents for discussion. Each of the examples presented a different type of scenario and the discussion focussed on how each may offer various positive or negative qualities in respect of Crewe.

- **Reading** – A commuter town with direct connections to London. A robust public transport network serves the local urban area and feeds a thriving economy. The station is located adjacent to central Reading within quick access to key assets.
- **Cambridge** – A historic and constrained destination that is served by an extensive park and ride network. In reducing vehicle movements in the centre, central Cambridge is heavily pedestrianised.
- **Milton Keynes** – A commuter town wit.h a strong economy built on the relationship of the town centre, the station, and the links to large economic centres such as London and Birmingham. The urban area around Milton Keynes allows for suburban living with a reliance on cars and buses to connect the locality to the station.
- **Ebbsfleet** – A park and ride station, Ebbsfleet does not sit within an existing urban area, but rather within large areas of surface parking. The surface car parking is a detriment to the external station experience and the quality of the surrounding spaces. Instead of being a destination, Ebbsfleet is used as an interchange between car and rail.

The conclusion from the workshop was that the aspiration for Crewe was very similar to Reading, however, surprisingly the Ebbsfleet model was still considered a valid part of the Crewe strategy. To summarise, it is envisaged Crewe will be a town with its station at the heart, have a robust local transport network, a thriving local economy and be a destination for business. It is also acknowledged that not everyone will travel to Crewe for these purposes and that it will function to some extent as a park and ride station for the wider region following the HS2 connection improvements to London, Birmingham and Manchester.

Figure 2.1 - Reading

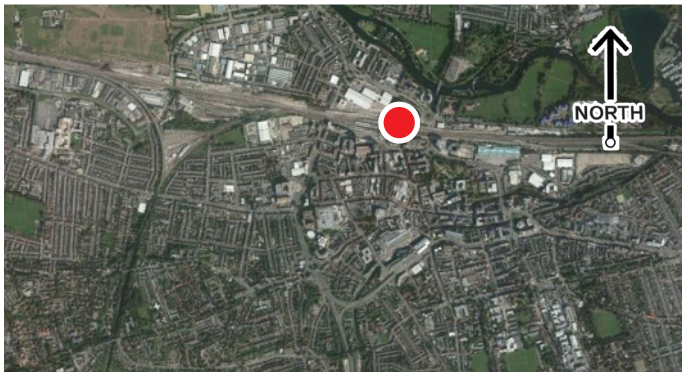


Figure 2.2 - Ebbsfleet

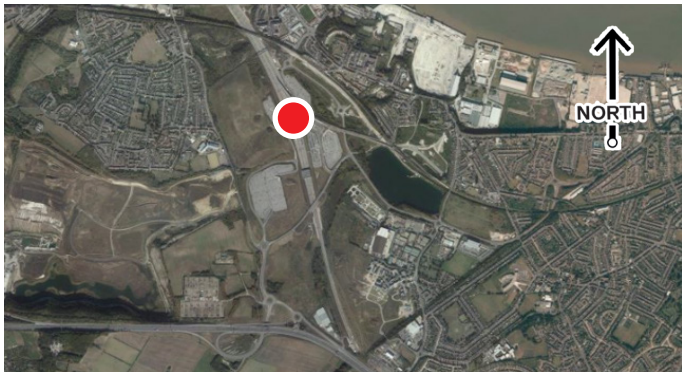


Figure 2.3 - Milton Keynes

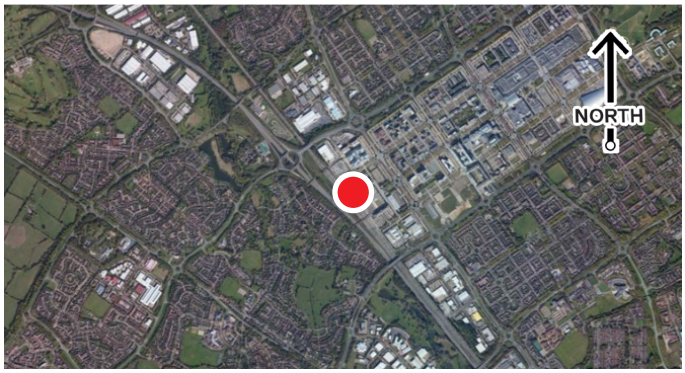
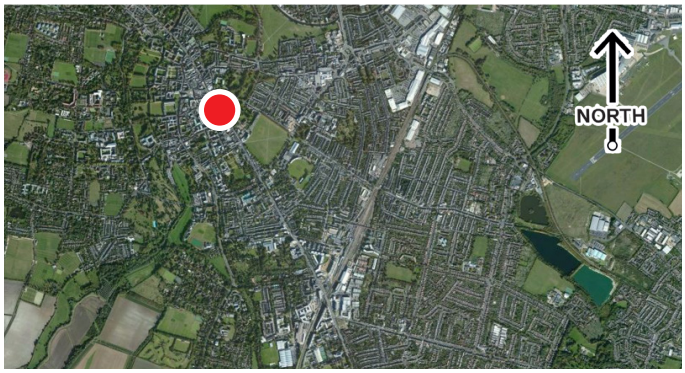


Figure 2.4 - Cambridge

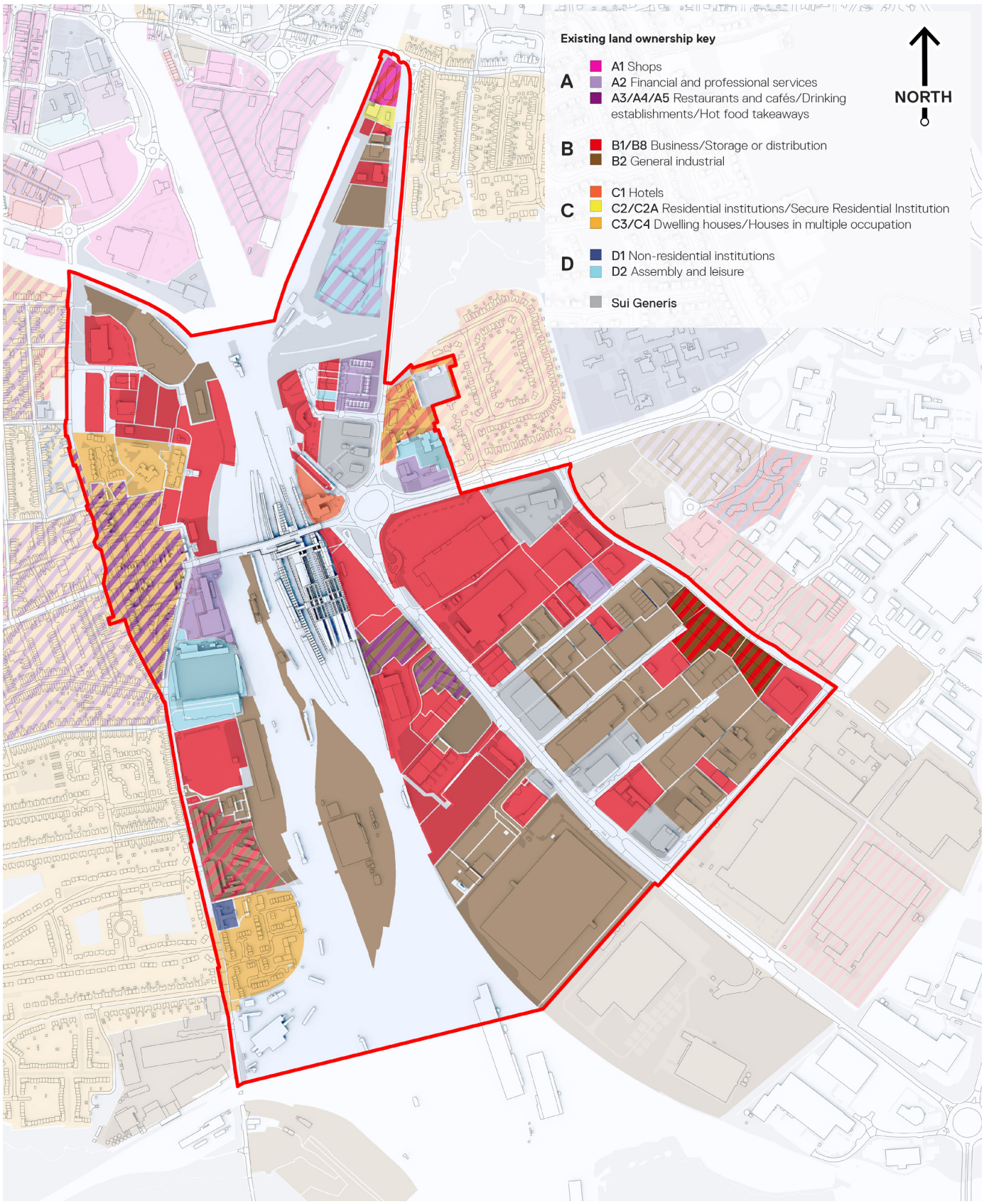


2.2 - EXISTING LAND USE

The existing site land uses are formed by a mix of uses, however there are a number of traits which can be observed, in particular the split of different types of land uses which are segregated by the railway corridor. This severance caused by the railway is one of the principal issues which any masterplan must address and the provision of an east-west bridge link will undoubtedly go some way to improving the situation. To the east of the rail corridor, there is a predominance of B1 Business/Storage or distribution B2 General Industrial type land uses. The quality of building stock to this side of the railway is generally poor and it can be seen that there are many opportunities for significant development to this part of the site, particularly with respect to the sitting of the principal station entrance, assuming that Nantwich Road is no longer the primary entrance.

To the west of the railway corridor, existing land uses are generally more mixed, but again there is a predominance of low to medium quality building stock. There is a greater amount of residential and A3/A4/A5 food and drink type outlets as the mixes merge with a more town centre type grain, however, there is little or no high quality buildings, even on prime development sites, such as Rail House. The link into the town centre via the western rail embankment also offers a poor quality experience and there is no visual clues as to how to way find the journey by foot or cycle into the town centre. Mill Street is the main route into the town centre but along its length again is generally low quality building stock, culminating in the rail underpass route which is the main link into town.

Figure 2.5 - Existing land use



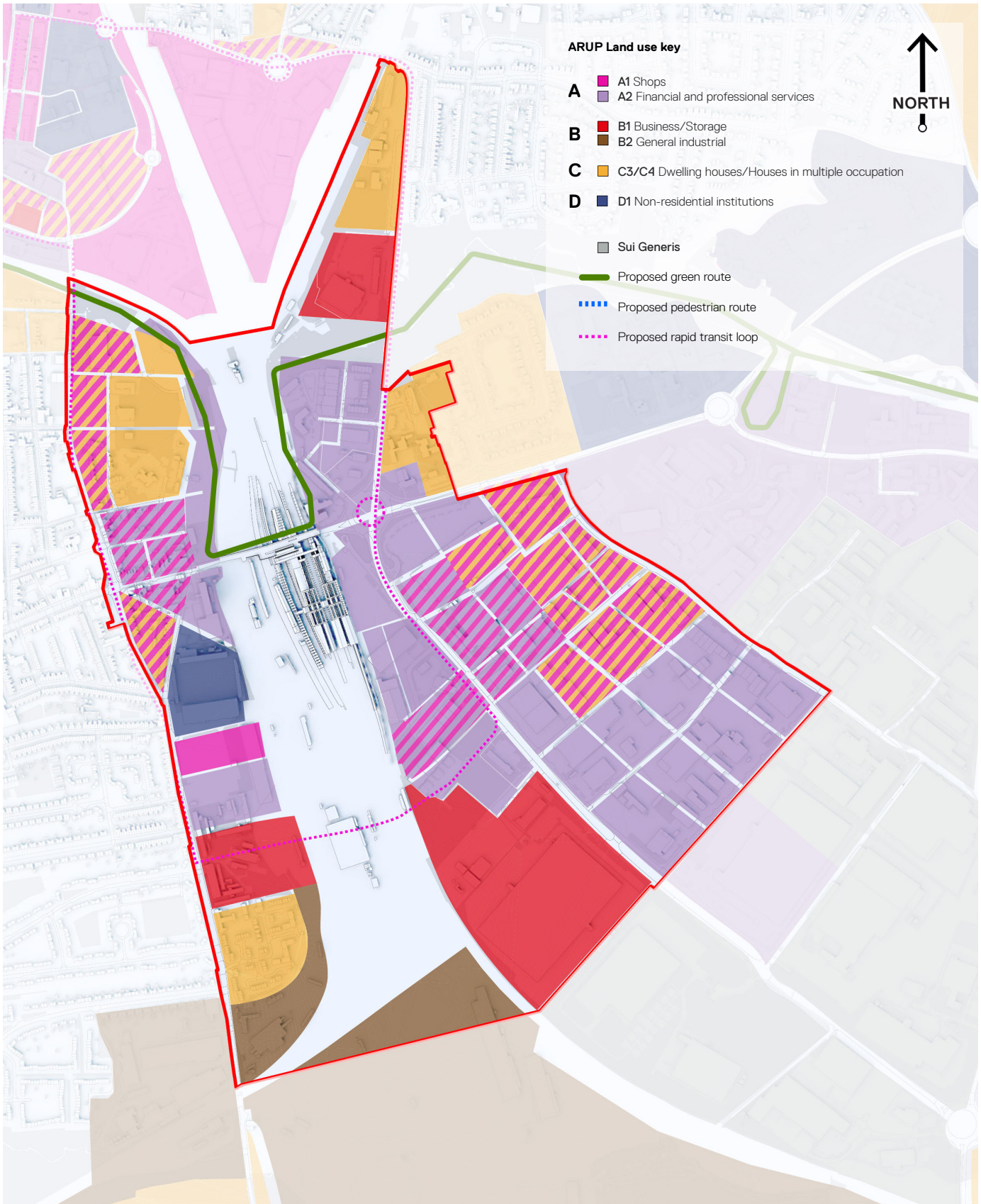
2.3 - BASELINE LAND USE

The plan diagram on the right illustrates the types of future land uses as proposed by the CEC June 2017 Crewe HS2 Hub Framework Report. It should be noted that there has been a degree of interpretation of the CEC masterplan documentation in order to generate a proposed land drawing which can be read in the same format, as the boundaries were different. As described in the preceding section, one of the main tenets of the proposal is a paradigm shift of uses on the east side of the railway corridor, from industrial/ storage to more commercial and retail uses. There is also a quantity of residential and mixed uses on the west side, extending the town further to the south than is currently the case.

To the west side, the Alexandra Stadium is retained, which reduces the available land and the level of development which can be proposed on this side of the railway. To the north of the stadium and up towards the town centre, there is a proposed intensification of residential mixed and commercial mixed uses. The actual mix has not been defined, however, retail is the most logical mix given the location and existing retail provision along Mill Street.

The proposals contained within this document as shown in masterplans 1, 2 and 3 each establish a unique principal goal, but each of them also generally take the baseline established here by the CEC June 2017 Crewe HS2 Hub Framework Report in terms of quantum and outline use changes, for further development.

Figure 2.6 - CEC Study proposed land use



2.4- CONSTRAINTS, BACKGROUND CONDITIONS AND OPPORTUNITIES

As part of the existing site analysis, we have undertaken a high level analysis of what constraints and opportunities might exist within the red line boundary site area.

One of the most predominant constraints on the site area is evidently the rail corridor itself. Historically, the town of Crewe grew developed almost exclusively due to, and around the railway. The north/south alignment of the rail corridor but also the forking 'trident' shape junction to the north of the station effectively splits Crewe in half. The town centre itself is poorly located, sited on a triangular spit of land to the north west of the station, and is severed from the station and south of the town by the Chester lines.

It is primarily the severance created by the railway corridor of the town centre from the station and the residential areas to the south of Crewe, but also the severance of the town on an east to west axis imposed by the railway, which any future masterplan must address.

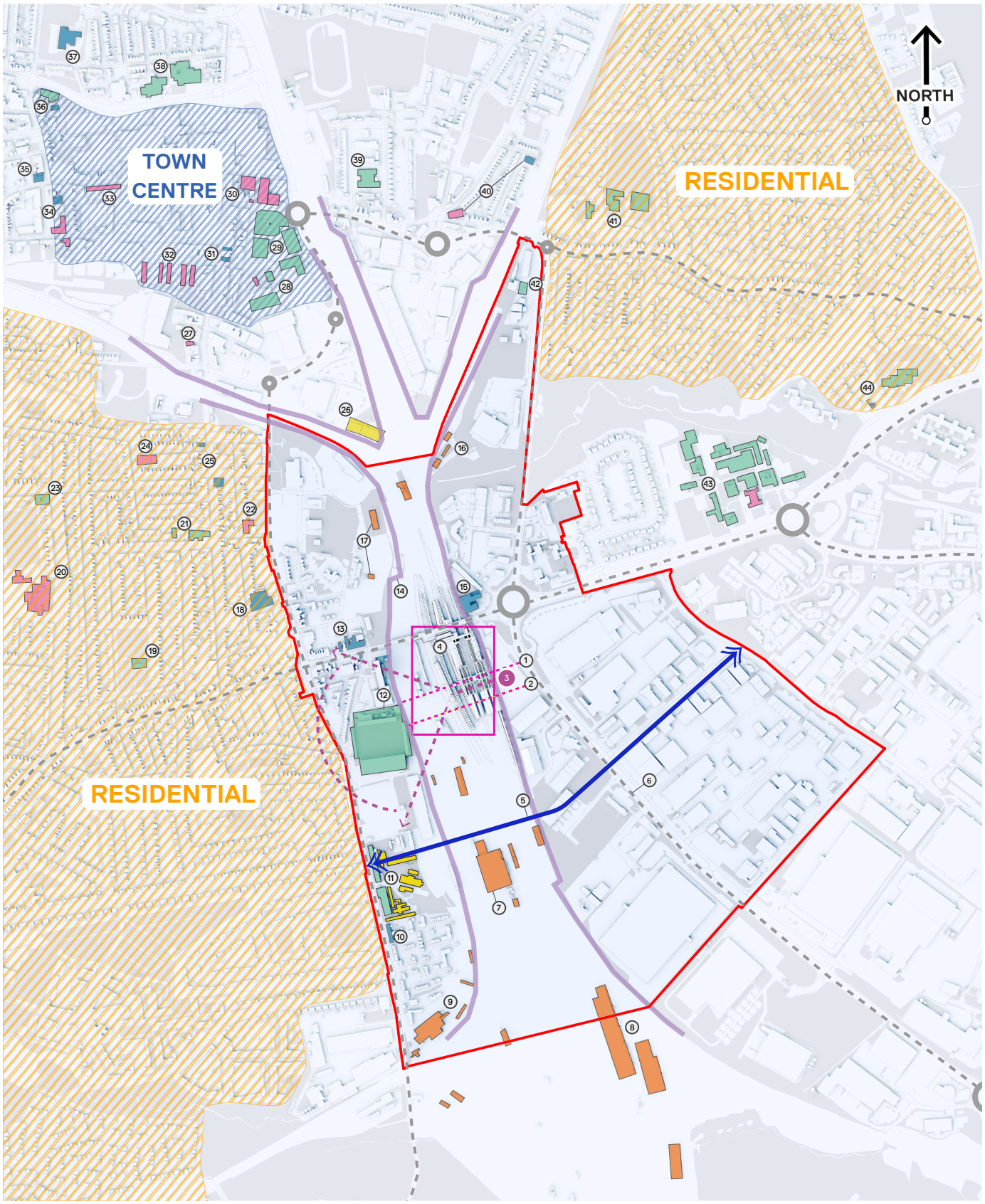
The east/west severance issues are compounded by the limited amount of rail crossings. Where crossings exist, they are typically road bridges which are at or over capacity. Road bridges such as that at Nantwich Road, on which the existing station entrance is sited, are typically very congested, highly polluted environments which are not conducive to either pedestrian or cycling. Closing the Nantwich Road Bridge station entrance will to a certain degree, lessen the traffic conflicts on the bridge however it is thought that the bridge will still be at or over capacity due to its current strategic location as an east to west thoroughfare for the town. It is the ambition of the CEC masterplan proposals to create an east/west pedestrian bridge link through the centre of the station connecting the land directly outside the west flank of the station, around Weston Road and the Gresty Road area and link up into the town centre on the east side. This proposal will help reduce the severance across the site and improve east/west connectivity.

Figure 2.7 - Constraints and opportunities key

1. Listed station accomodation constraint
2. Platform infill constraint
3. 3A Deck alignment with East/West entrances
4. Grade II Listed station accomodation and walls
5. Southern link bridge
6. Junctions and linkages
7. LNWR Heritage Co.
8. Arriva TrainCare
9. Carllion Railway Company
10. YMCA
11. Unipart Rail (Victorian buildings may be a constraint)
12. Football stadium
13. Royal Hotel & Westminister House & 2A Gresty Road
14. Edge condition
15. Crewe Arms Hotel
16. Rail Power Supply and Control Buildings
17. Pedley Street Car Park Substation & Crewe Signalling Centre
18. Marmion Clothing Factory
19. Westminster Street County Nursery School
20. Grade II Ruskin Road School and Caretakers House
21. Hope Church & Child Care Centre
22. Grade II Union Baptist Church & Attached Boundary Wall and Railings
23. St Stephens Methodist Church
24. Grade II Crewe Drill Hall
25. Imperial Hotel & Temple Chambers
26. Crewe Heritage Centre
27. Grade II Christadelphian Hall
28. Police Station, Lifestyle Centre, Christ Church and Grade II Tower of Christ Church
29. Magistrates Court, Library and Grade II War Memorial
30. Grade II Lyceum Theatre, Three Lamps, Market Hall & Municpal Buildings
31. Midland & Former Bank
32. Grade II Dorfold Street, Betley Street and Tollitt Street
33. Grade II 76-90a Victoria Street
34. Liberal Club, Grade II Church of St Mary & 47 Delamere Street
35. Former Congregational Church
36. Christian Concern & Former AUEW Office
37. Beechwood Primary School
38. Sir William Stainer Community School & Engineering and Design UTC
39. Brierley Primary School
40. Clothing Factory & Grade II Church of St Peter
41. Medical Centre and Hungerford Primary Academy
42. Vet Hospital
43. Manchester Metropolitan University Campus (Planning application for residential area) & Grade II The Delaney Building at Crewe and Alsager College
44. Springfield School and Former Mill House

- High value rail assets
- Listed buildings
- Buildings of importance
- Notable Buildings
- Rail related assets

Figure 2.8 - Constraints and opportunities map

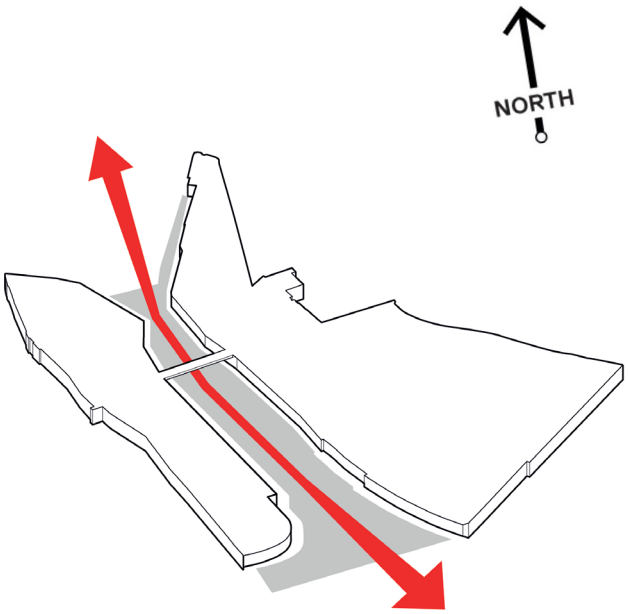


The railway corridor also imposes a form of severance longitudinally along its length, with long stretches of railway embankment and inaccessible land abutting the rail edge (Figure 2.9). This presents a real design challenge. As the railway carves its way through the town centre, it will be incumbent on the masterplan designs to attempt to address this form of severance by coming up with proposals to regenerate and revitalise the spaces along the railway edge. On the north/south link along Mill Street, there is a great opportunity to intensify the residential and small scale retail/ commercial uses to strengthen the links into the town centre from the station (Figure 2.10).

There are a number of fixed rail assets along the rail corridor, illustrated in yellow on the plan which as operationally important assets the masterplan will not make any proposals to change. There are also a number of associated rail assets of such as Unipart Rail, Pedley Street Sub-station and also the Crewe Heritage Centre and others which should either be retained or enhanced in some way.

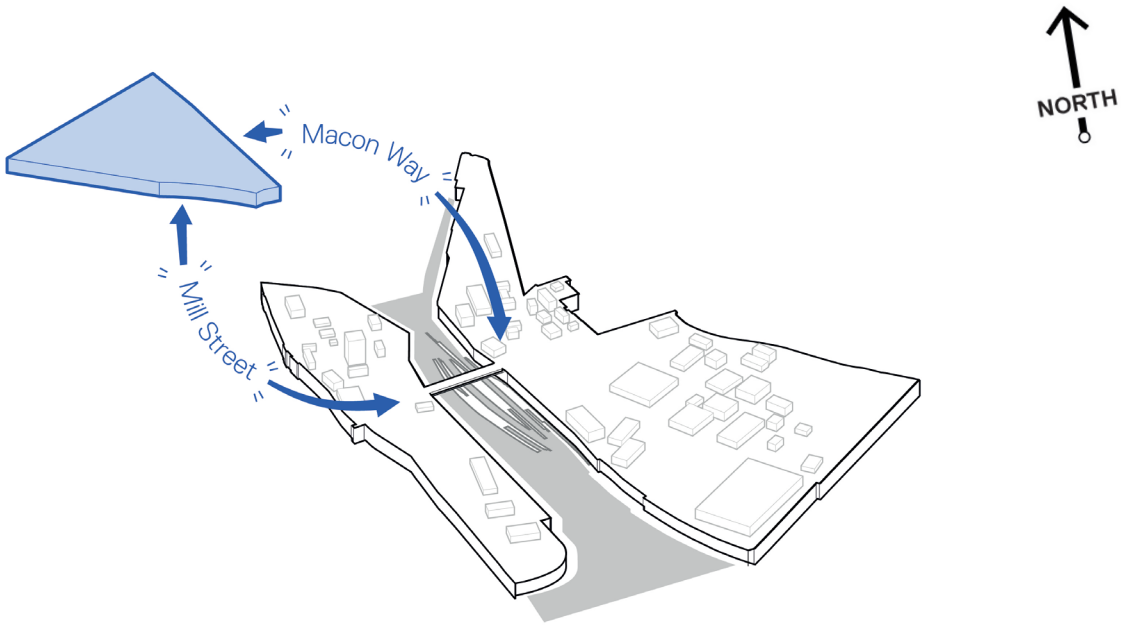
The Alexandra Stadium site lies on Gresty Road in what is a fairly mixed area in terms of land use, but is bounded by quite narrow streets and some existing dense residential uses. The proposed east/west bridge link which will pass through the centre of the station will land in and around the area currently occupied by the stadium on the east side. At this stage, as part of the three initial masteplans to be taken forward to the next stage of design, the design team are proposing an option to re-locate the stadium from Gresty Road (masterplans 2 & 3). This would be primarily to free up space around the area where the proposed bridge deck will land on the east side, for new development. This site is critical as a hinge point for aligning a pedestrian route on the north/south axis into the town centre from the new bridge deck link. Additionally, further development of the transport design at a later stage may also suggest that Gresty Road becomes an important and more significant north/south transportation route, promoting more efficient wider links north/south through the town. This proposal would also most likely require the relocation of the stadium.

Figure 2.9 - Severance caused by the railway



Rail edge embankment condition

Figure 2.10 - Incoherent connections between station and town



Mill Street link

2.5- HERITAGE

Crewe boasts many high-quality heritage assets that are protected under the 'Planning (Listed Buildings and Conservation Areas) Act' and through CEC's 'Local Listings'. These designations exist to protect a building or site for future generations and maintain local character to ensure a sense of place. Designated heritage listings inherently create constraints to a proposed station design and masterplan through their protection. Figure 2.11 provides a non-exhaustive list of listed buildings that impose constraints on the design, which are highlighted in pink. Please note that very few listed buildings exist within the redline boundary, and those that do are located within the station envelope.
Listings are graded from highly rare 'Grade 1', through to the lesser protected 'Grade 2*', 'Grade 2, and 'Local Listings'. As can be expected, higher graded examples are associated with a higher level of protection that can increase the level of constraint on a proposed design.

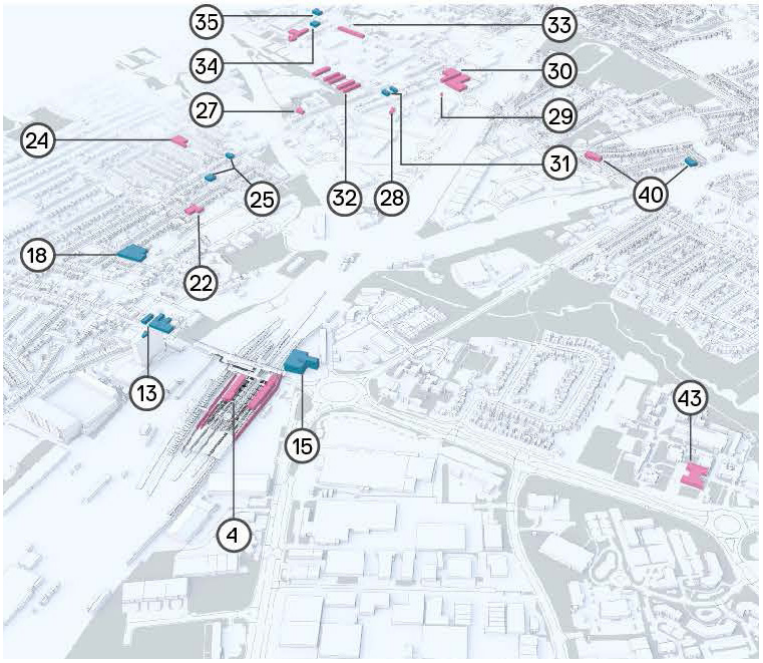
Given Crewe's lineage as a railway town it is unsurprising that the station contains multiple 'Grade 2' designated heritage elements that are protected under the Planning Act. Under listing entry '1436435' the station items expressly referred to are; a pair of railway station platform buildings, flanking walls and arcades of 1867. A full description of the listing can be found on the Historic England website.

These listed station elements are given an extra level of protection through the planning process and require 'listed building planning approval' prior to any change or removal. However, it is important to note that listings only relate to specific parts of a building or site. For example, in the case of the Crewe station building's the designation specifically refers to the "cream and orange brick, and terracotta construction" elements.

The listing expressively notes that the red-brick first floor and late additions of the 1891 Eastern station building are of "no special architectural or historic interest" and are therefore less contentious to local planning constraints. Specialist advice should be sought from heritage consultants prior to any change.

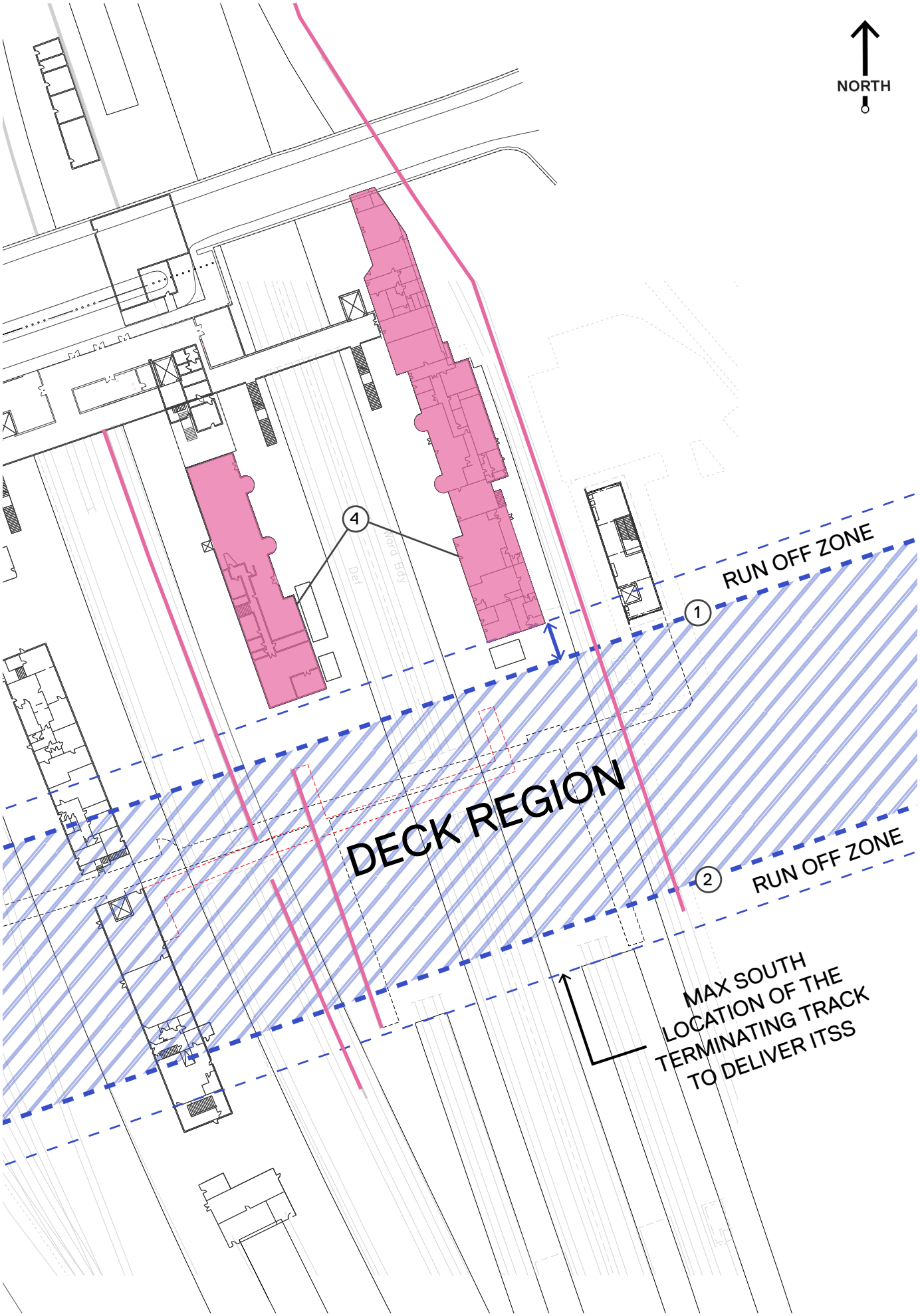
Additional constraints have been imposed onto the station and masterplan to protect these specific elements and ensure compliance. For example, the location of the station buildings has created a 'proposed deck region', which outlines where a new deck can be located. This region is generated to prevent the stations vertical circulation and associated run-off requirements from clashing with the listed station buildings. To prevent a clash an offset distance from the back of the listed building is applied to create a 'deck region'.

Figure 2.11 - Heritage mapping



(4) Grade II Listed station accomodation and walls
(13) Royal Hotel & Westminister House & 2A Gresty Road
(15) Crewe Arms Hotel
(18) Marmion Clothing Factory
(22) Grade II Union Baptist Church & Attached Boundary Wall and Railings
(24) Grade II Crewe Drill Hall
(25) Imperial Hotel & Temple Chambers
(28) Police Station, Lifestyle Centre, Christ Church and Grade II Tower of Christ Church
(29) Magistrates Court, Library and Grade II War Memorial
(30) Grade II Lyceum Theatre, Three Lamps, Market Hall & Municpal Buildings
(31) Midland & Former Bank
(32) Grade II Dorfold Street, Betley Street and Tollitt Street
(33) Grade II 76-90a Victoria Street
(34) Liberal Club, Grade II Church of St Mary & 47 Delamere Street
(35) Former Congregational Church
(40) Clothing Factory & Grade II Church of St Peter
(43) Manchester Metropolitan University Campus

Figure 2.12 - Station heritage constraints



3.1- DESIGN CONSIDERATIONS

A number of key design considerations have been identified within Crewe. This section details how each 'design consideration' has been identified and how a possible solution may manifest across each of the three Masterplan options.

- **A new commercial centre with close links to the station.**

  Within the red-line boundary there is a large amount of new development to occur, the majority of which is commercial space. A new Crewe Campus region should look to create a new centre around the station utilising the high value well connected land to the east and west.

  This approach is common to all masterplans developed. However, the new commercial centre around the station can take many guises, and its relationship to the existing town centre can vary across options. Should this new region be solely commercial? Should it be a place to live also? Should it be a new town centre for Crewe or a Regional centre that compliments existing town centre functions?

- **Densification**

  The red-line region is currently very low density and apart from a few exceptions building heights are limited to around two or three storeys. In order to deliver the kind of development quantum within the red-line a significant change is required to the surrounding density.

  Although the change is primarily physical, a shift in attitudes to modes of living are required. The masterplans developed offer different scenarios from the location of residential areas to the type of housing. Generally there is a shift away from the detached and semi-detached executive housing as seen in new developments around Crewe to higher density forms of apartment and mews house living in close proximity to the station.

Figure 3.1 - New commercial centre with close links to the station

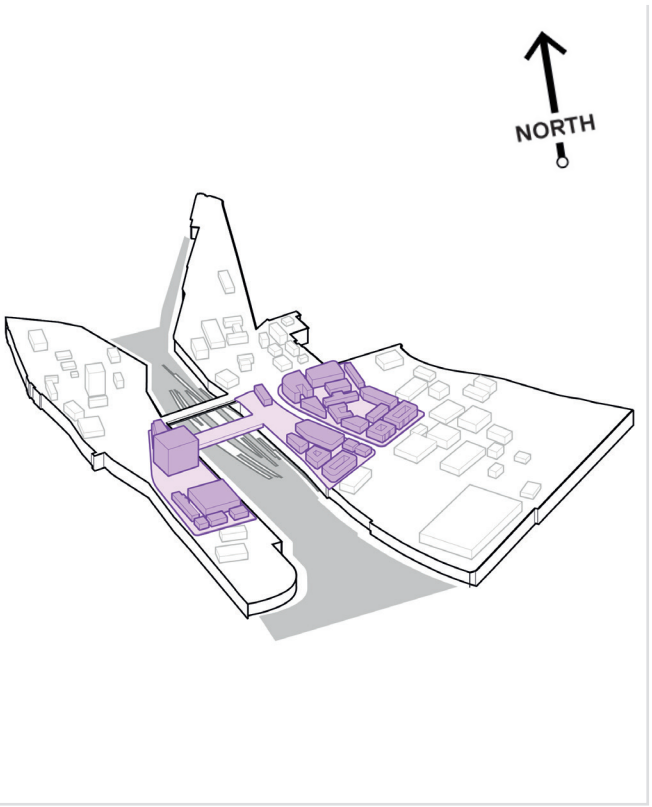
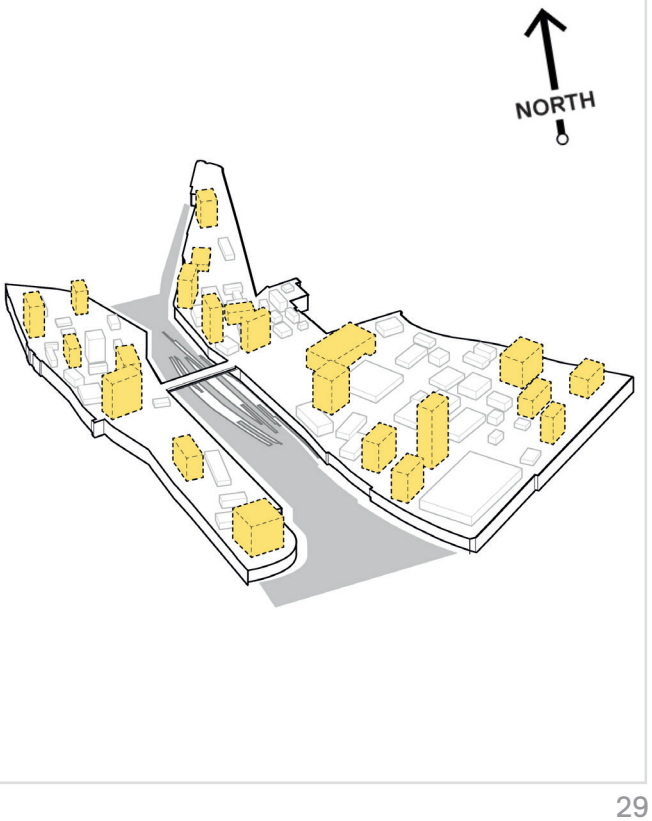


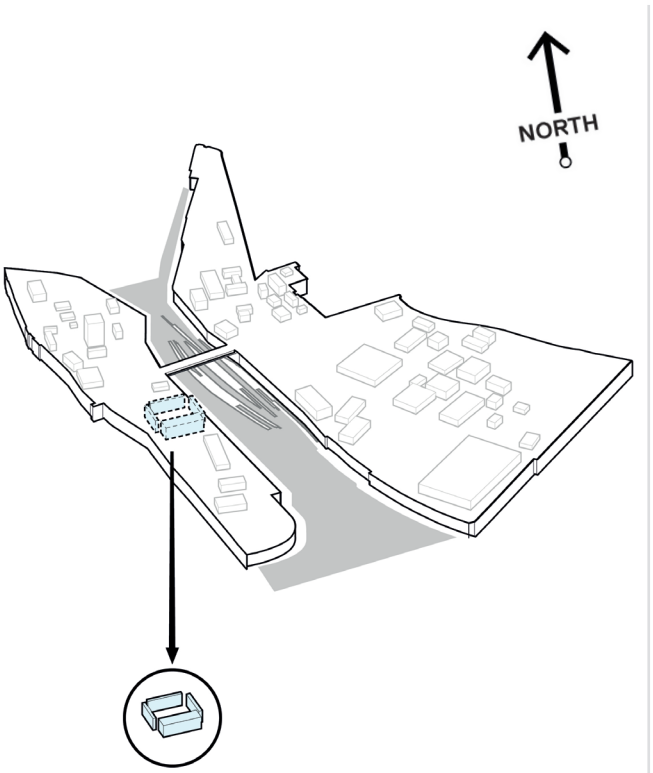
Figure 3.2 - Densification



- **Stadium relocation**

  Each of the masterplans take a different approach to Crewe Alexandra stadium, some keep it, others look to relocate it. Maintaining the stadium in its current location constrains the station development on the western edge and proves a barrier to locating station car parking to the south. In this location it also constrains the potential width of Gresty Road. Alternative locations have been explored to better utilise this location yet still prove to be a key component in the wider Masterplan. Locations within the new Campus Zone and Basford East have been explored to ascertain the impact on development and transport strategies.

Figure 3.3 - Stadium relocation

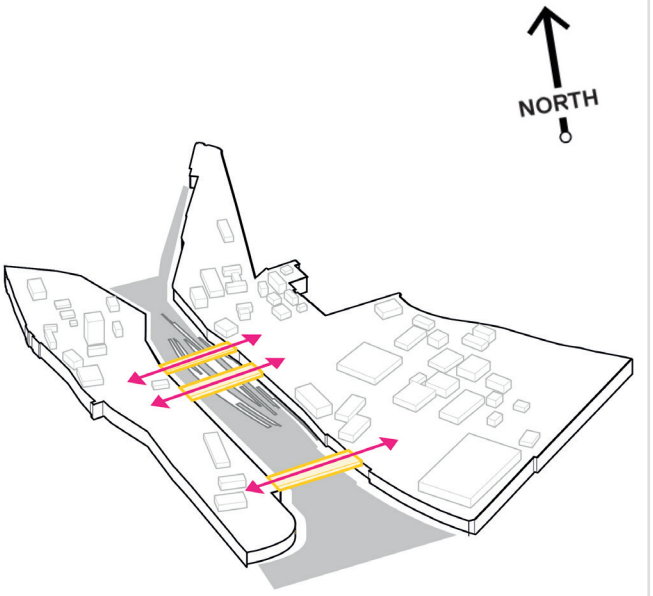


- **Crossing points**

  As identified in the constraints section, severance caused by the railway corridor is a real problem in Crewe. Masterplan solutions have been developed which look at a range of improvement measures based around new vehicle and pedestrian links. The amount of new links vary between options ranging from a new southern link bridge and / or re-use of Nantwich road. Seen as a more economical solution the provision of pedestrian bridges has also been explored with some options offering multiple crossing points.

  The station also plays a key role in resolving severance. Although this study assumes that the station is to have an east and a west entrance it does explore how the station deck arrangement within each option can offer different levels of permeability.

Figure 3.4 - Crossing points

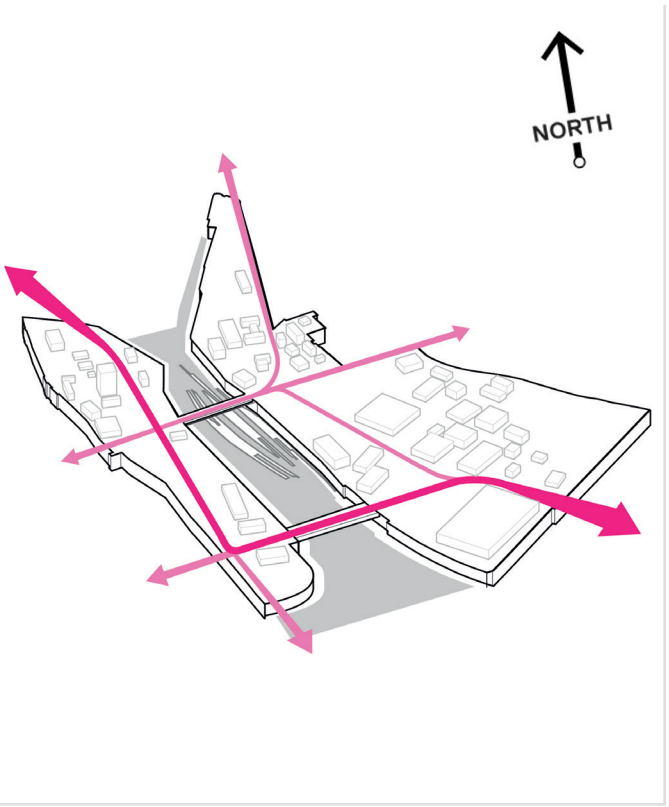


- **Key routes**

Within the Crewe urban area there are a number of key assets that should be coherently linked, not least the station and the existing town centre. The previous CEC study sought to remedy this through a transit loop that involved individuals traveling to and from the existing and new centres. This approach is challenged in the transport work and subsequently the masterplans.

Key routes are defined as a much wider axis that runs between Basford to the south and Leighton Hospital to the north calling at the Station, the existing town centre and Bentley. The extent to which each Masterplan can accommodate this approach is dependent on the crossing points, their location and the type of crossing.

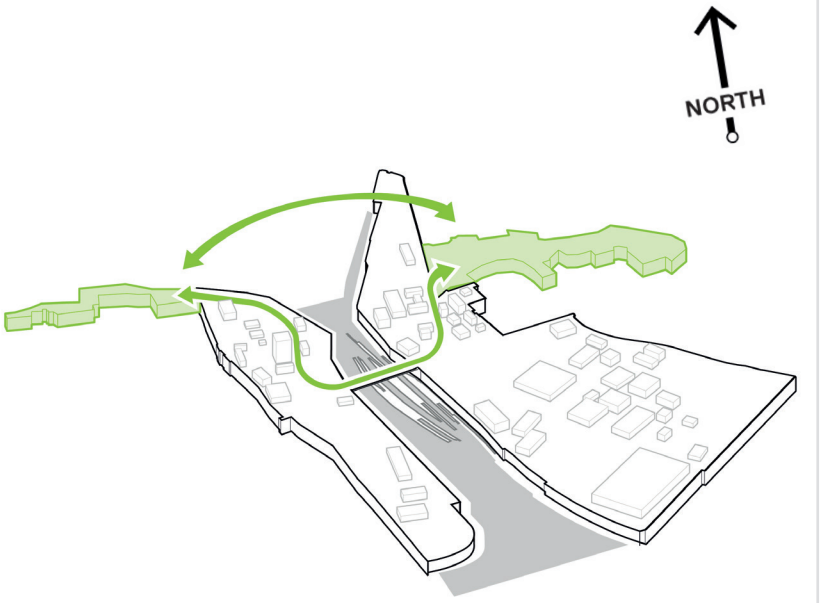
Figure 3.5 - Identify the key routes



- **Cheshire landscape**

The desire to bring the Cheshire landscape into the station and Crewe Campus area has been address in a number of ways. Firstly each Masterplan options seeks to reinforce existing green areas by creating connections across the railway. Each masterplan also adopts a 'Green Link' that provides a pedestrian and cycle circuit running between station and existing town centre whilst implementing new crossing points. Where green link crossing points occur is dependent on the masterplans 'crossing point' provision. As well as potentially bringing the green link through the station, the station design has also been identified as a key component to reflect the Cheshire landscape concept within the masterplan.

Figure 3.6 - Bringing the Cheshire into the red-line



3.2- FRAMEWORK DIAGRAMS

Each masterplan has been structured in relation to the below diagrams. The framework diagrams abstract the principles of each Masterplan 01, 02 and 03 to allow for an easy of comparison and clarity of concept. To establish the level of change, a framework diagram has also been completed for Crewe as it exists today:

- Station entrance directly linked to Nantwich Road
- Area to the east primarily light industrial
- Station not coherently linked to the town centre
- No link to key assets such as Bentley and Leighton Hospital

Masterplan 01
Two linked centres

- Two centres that are complimentary
- Mill Street used as primary connection into the existing town centre
- Little overlap in function
- Crewe Campus linked to town centre with new civic and commercial areas and a high amenity green loop
- Football Stadium remains as a draw to the south
- New southern link bridge provides a alternative east/west vehicle route

Figure 3.7 - Crewe today

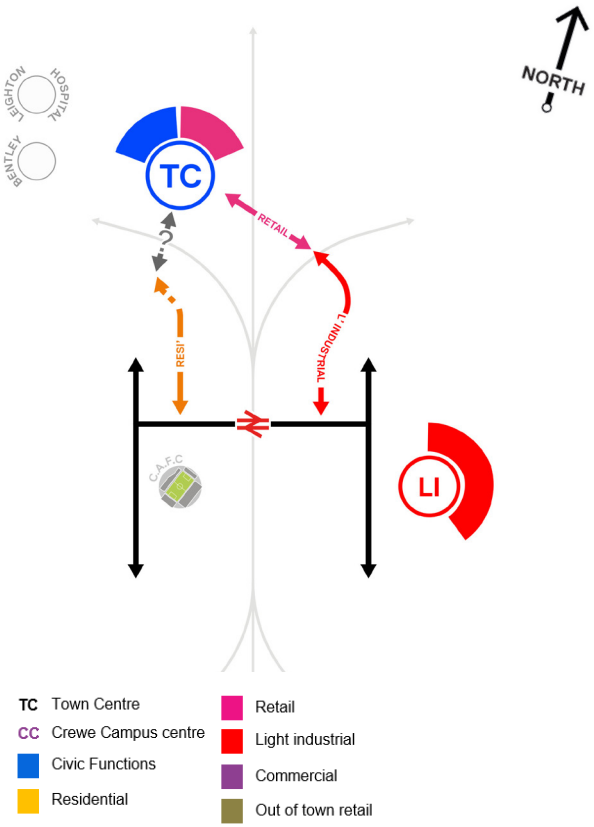
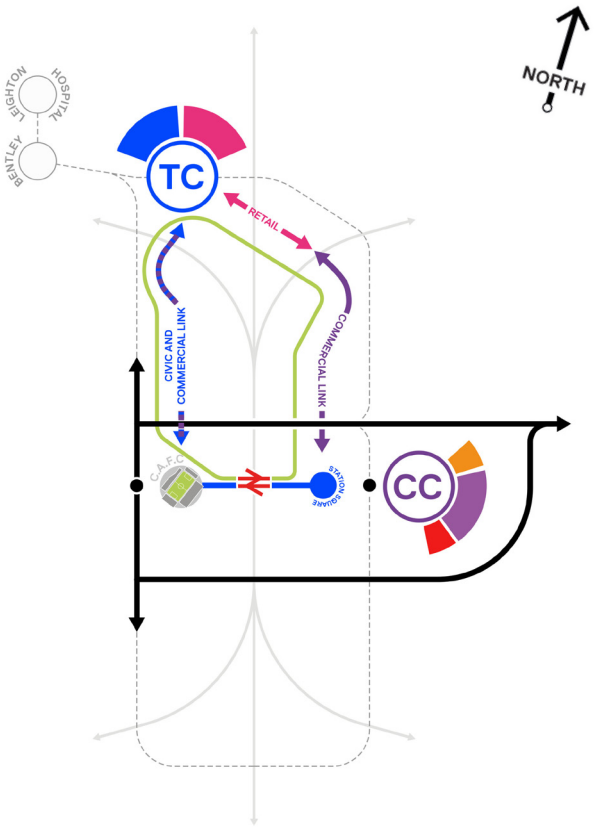


Figure 3.8 - Two linked centres



Masterplan 02
New town centre

- Existing town centre densifies residential and local retail uses
- Shift in gravity to Crewe Campus
- Crewe campus to include civic, retail and some high density residential functions
- New southern link bridge provides primary east/west vehicle route
- Nantwich road retained and incorporated into the green loop allowing pedestrians and public transport to cross
- Football stadium relocated out of town retail

Masterplan 03
Two independent centres

- Recognises polarised functions and operates as two independent centres
- Little overlap in function
- Football Stadium is relocated to the east of the railway corridor to provide attractor within Crewe Campus
- Nantwich Road remains but wider strategic moves are used to alleviate congestion and the towns reliance on this crossing point

Figure 3.9 - New town centre

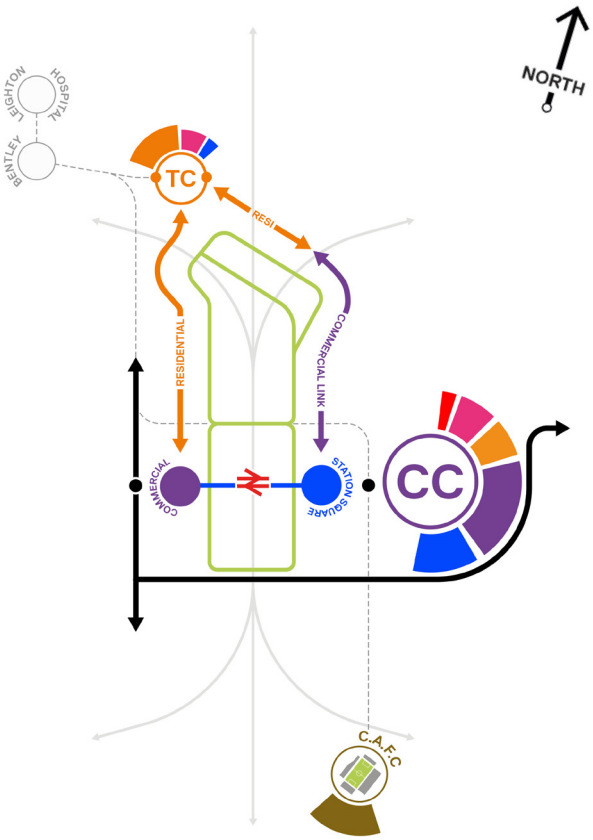
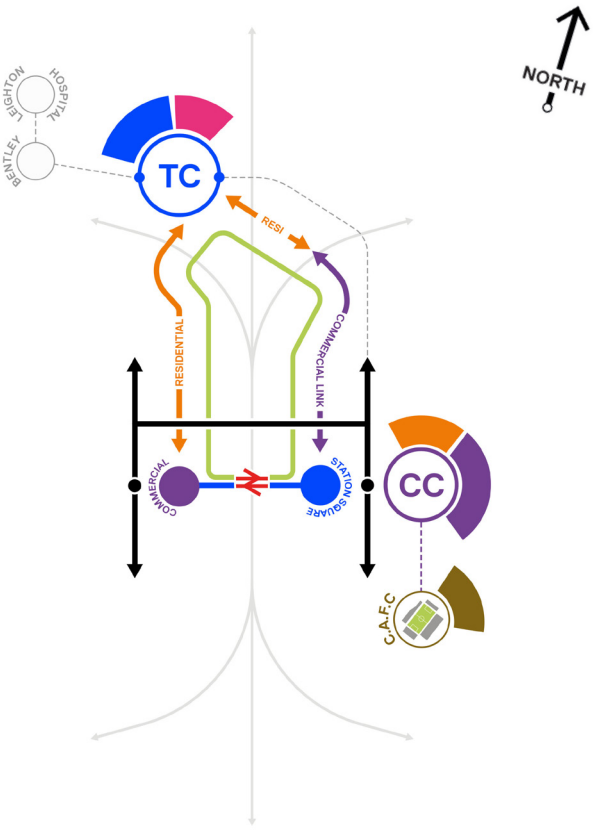


Figure 3.10 - Two independent centres



4.1 - TRANSPORT PLANNING

Existing Issues - Whilst the existing issues of the station and its environs are well documented, key transport issues can be summarised as:

- Car Dominance: Car driving or drop-off currently accounts for 61% of mode share for station access, partly due to the polycentric and rural nature of wider Cheshire, but also a lack of sustainable alternatives and an unattractive pedestrian environment around the station.

- Congestion: Around 20,000 vehicles use the A534 Nantwich Road daily, whilst congestion can be seen in other areas of Crewe at peak times. A large proportion of this traffic is also made up by HGVs.

- Car Parking: There are around 1,600 on-street car parking spaces available within short walk of the station, but station car parking facilities are up to 37% full overnight in midweek, driving up parking demand, reducing supply and representing an inefficient use of land. The varying quality and price of parking also leads to many people parking off-street, anecdotally causing issues for residential areas.

- Air Quality: The existence of an Air Quality Management Area at the junction of Nantwich Road/ Mill Street, shows air quality is a significant concern in areas around the station. Undoubtedly, the dominance of cars and HGVs in Crewe is a root cause.

- Pedestrian Environment: The area around the station can be described as 'grey'; with guardrails dominating the landscape and making for a poor quality public realm. The level of HGV traffic could be described as intimidating, particularly as narrow footways can cause overcrowding at the two pelican crossings on Nantwich Road.

- Cycling Facilities: There is no cycling provision on Nantwich Road Bridge or cycle stands at this access point, which handles 90% of movements. Nantwich Road is dominated by vehicles and is a very unattractive environment in which to cycle.

- Bus Facilities: Although Crewe station is located at the heart of the town's bus network, its facilities are rather run-down and in need of refreshment. Bus stops are also dislocated from the station, with poor visibility and signposting.

- Taxi Ranks/Pick-Up & Drop-Off: The existing space outside the main entrance to the station provides space for four taxis, disabled users and buses. Its location immediately outside the station results in it being misused for general pick-up and drop-off, incurring delay to bus and through traffic movements. This lack of space outside the main entrance is an inherent design flaw and should be considered in any future redesign.

- Alternative Accesses: 90% of all entries and exits to Crewe station are made via the 'front door' access on the A534 Nantwich Road bridge, already established as a busy crossing used by around 20,000 vehicles daily, including a large proportion of HGVs. The issues highlighted above are particularly concentrated at this access point, making them more difficult to rectify without a wider access strategy or wholesale redesign.

4.2- MAIN ROUTE ALIGNMENTS

Three schemes, based upon three varying main route alignments, have been produced for the Crewe Station Campus, and are considered as fundamental pillars for the wider masterplan. Each route alignment is set out below.

- **Figure 4.1 - Nantwich Road & Southern Link Bridge:** This alignment retains Nantwich Road Bridge as is, but would also introduce a southern link bridge. This route would create a link between B5071 (Gresty Road) and A532 (Weston Road).
- **Figure 4.2 - Southern Link Bridge only:** This alignment would see Nantwich Road Bridge retained for bus, pedestrian and cycle movements only, and introduce a southern link bridge to accommodate all other vehicular movements.
- **Figure 4.3 - Nantwich Road only:** This alignment would look to keep current traffic arrangements along Nantwich Road as is, with no new crossings of the railway. This is on the basis that east-west through traffic (trips not originating within Crewe) can be pushed onto the A500 to release capacity on this route.

Primary route
Secondary route

Figure 4.1 - Nantwich Road & Southern Link Bridge

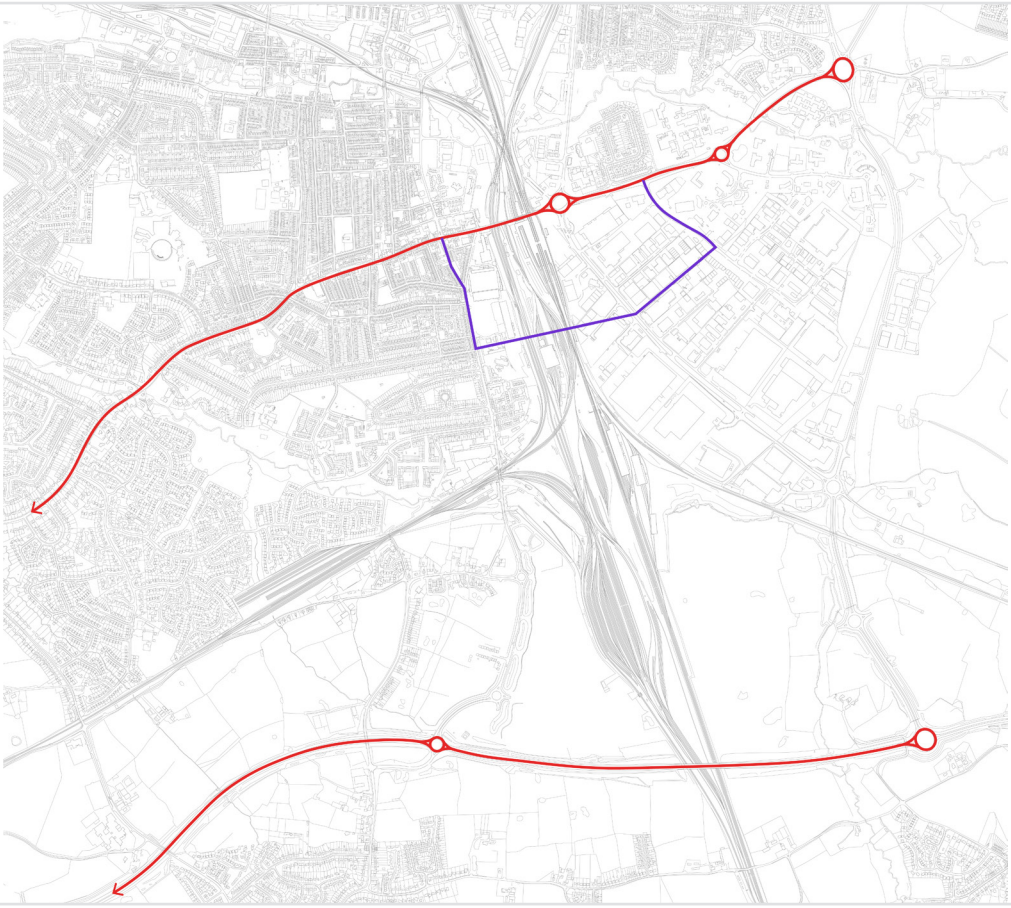


Figure 4.2 - Southern Link Bridge Only

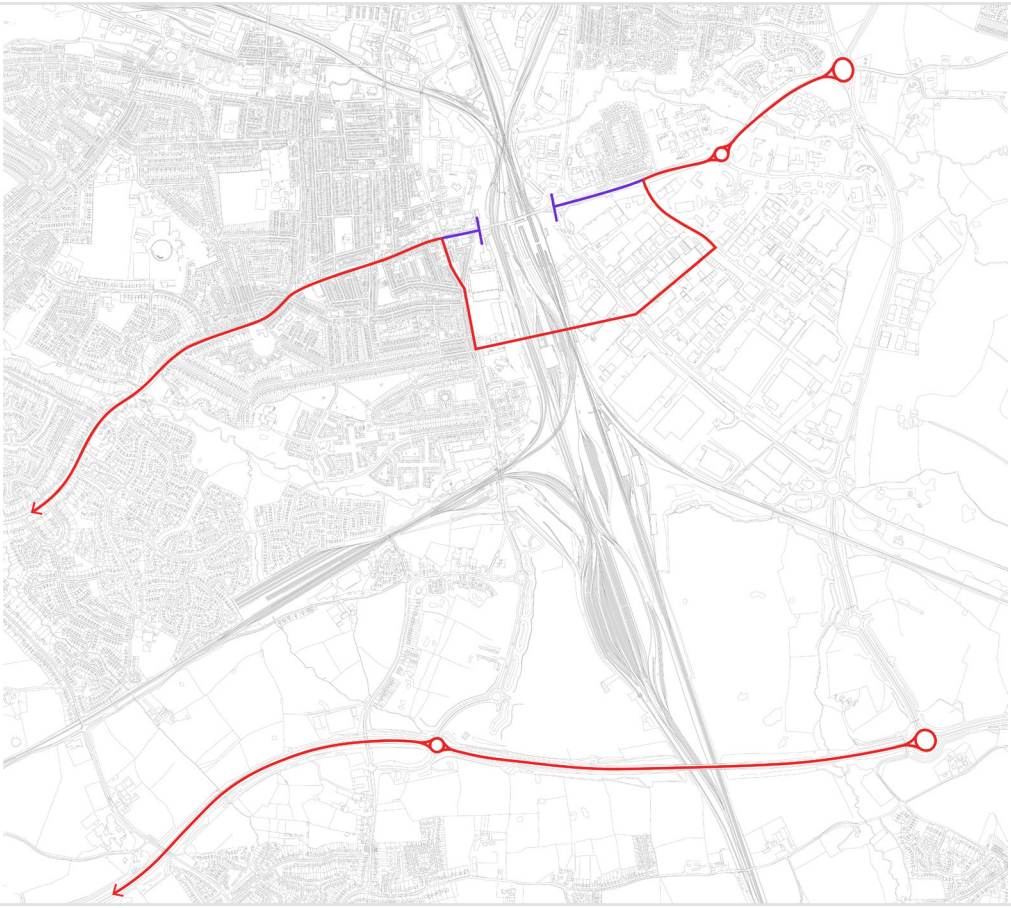
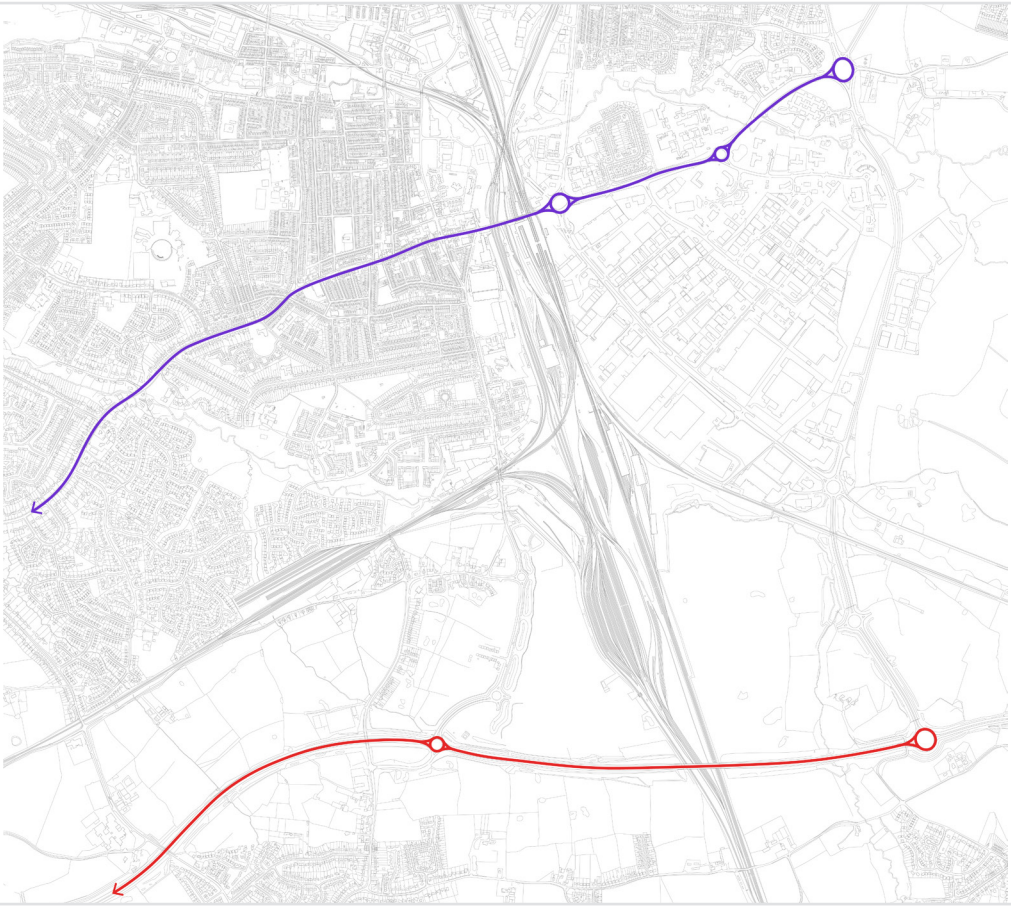


Figure 4.3 - Nantwich Road Only



4.3- MAIN ROUTE ALIGNMENT 3 - ANALYSIS

Road-side interviews (RSI) have been conducted at sites along the A534 southbound, A5077 westbound, A534 eastbound and A5020 northbound. Using this data, analysis has been conducted to better understand the nature of traffic using Nantwich Road and A500. The RSIs were conducted in a neutral week, of March 2017.

Figure 4.4 shows that along the A534 southbound, 8.6% of vehicles made cross-town journeys (of which, the route was unclear), and 74% of journey destinations were within Crewe.

It should be noted that in-depth analysis has only been conducted for main route alignment (MRA): 3 at this current time.

Figure 4.4- A534 Southbound

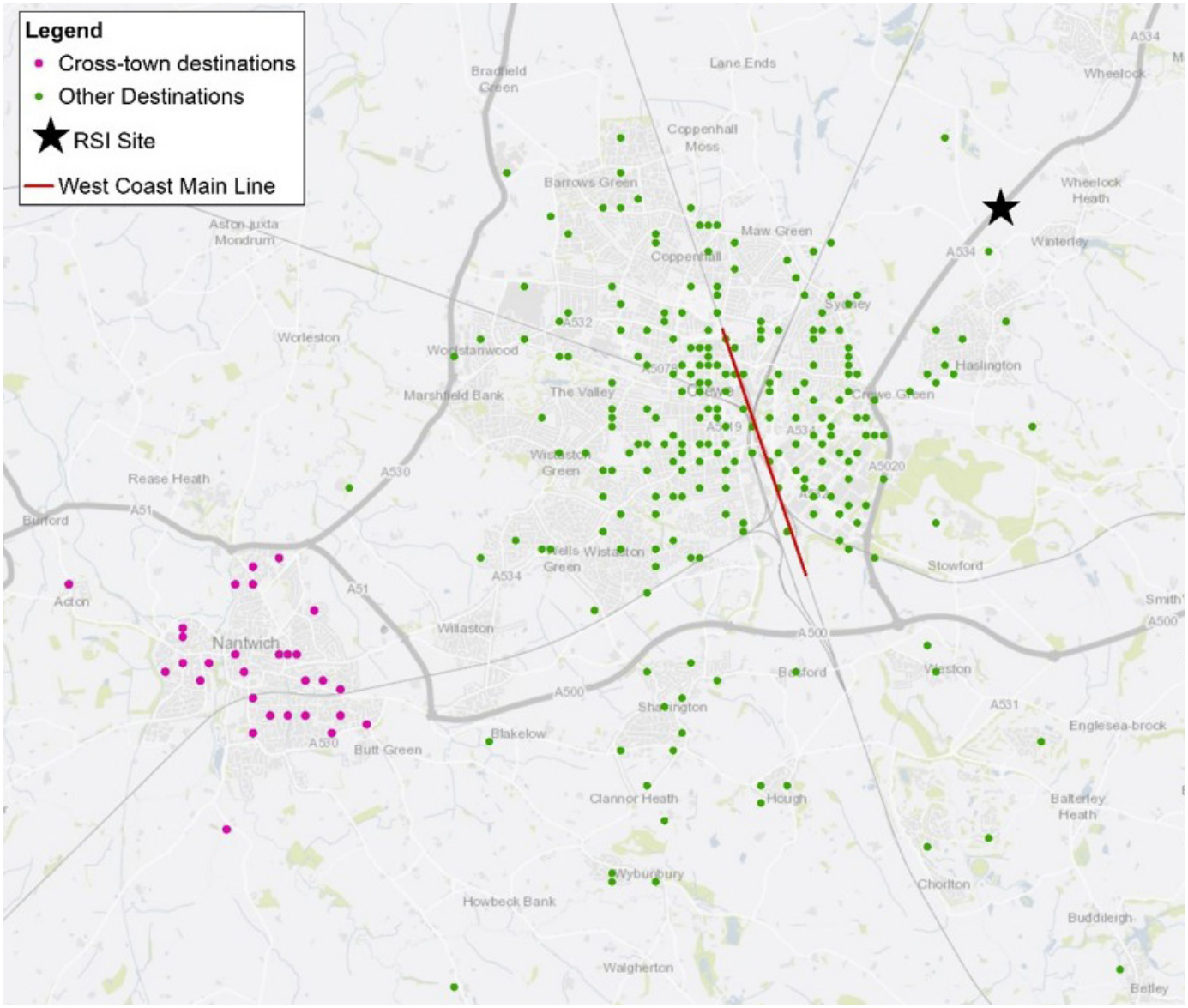


Figure 4.5 shows that for the A534 eastbound, 7.4% of vehicles made cross-town journeys, of which were almost certainly routed through the centre of Crewe via the Nantwich Bridge. Additionally, 89% of journey destinations were within Crewe.

Figure 4.5 - A534 Eastbound

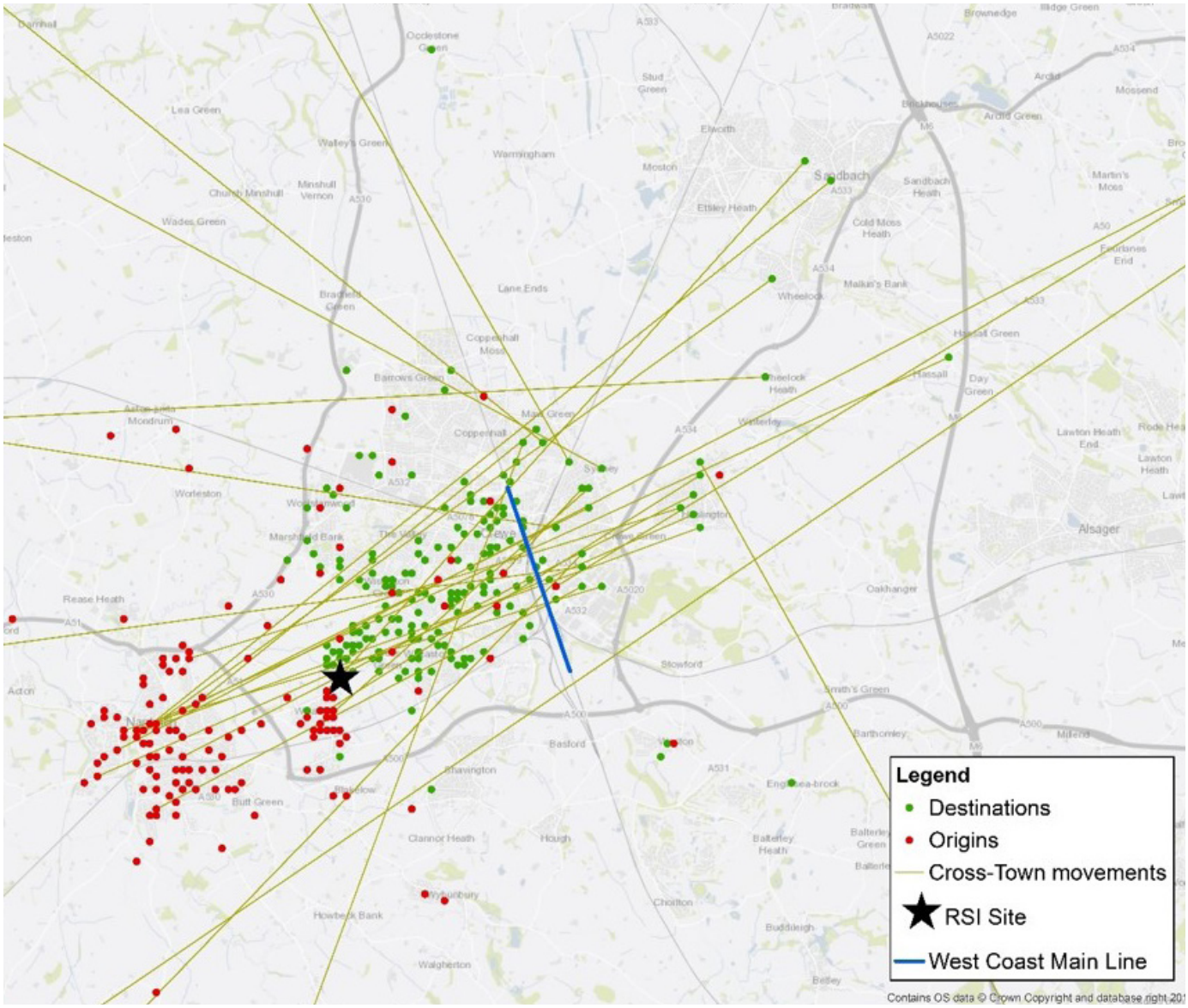


Figure 4.6 shows that along the B5077 westbound, 7% of vehicles made cross-town journeys (with the route choice unclear), and 76.6% of journey destinations were within Crewe.

Figure 4.6 - B5077 Westbound

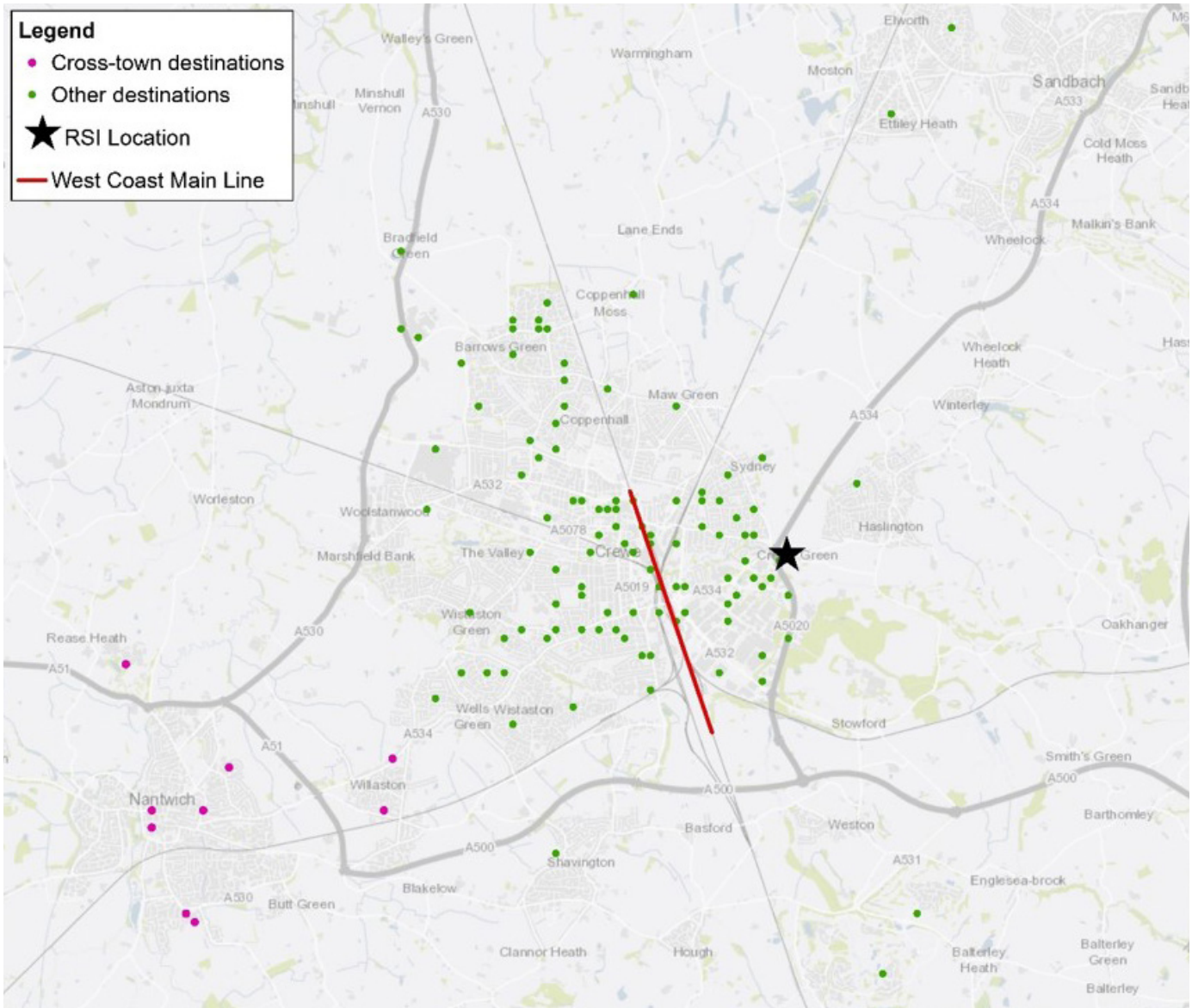
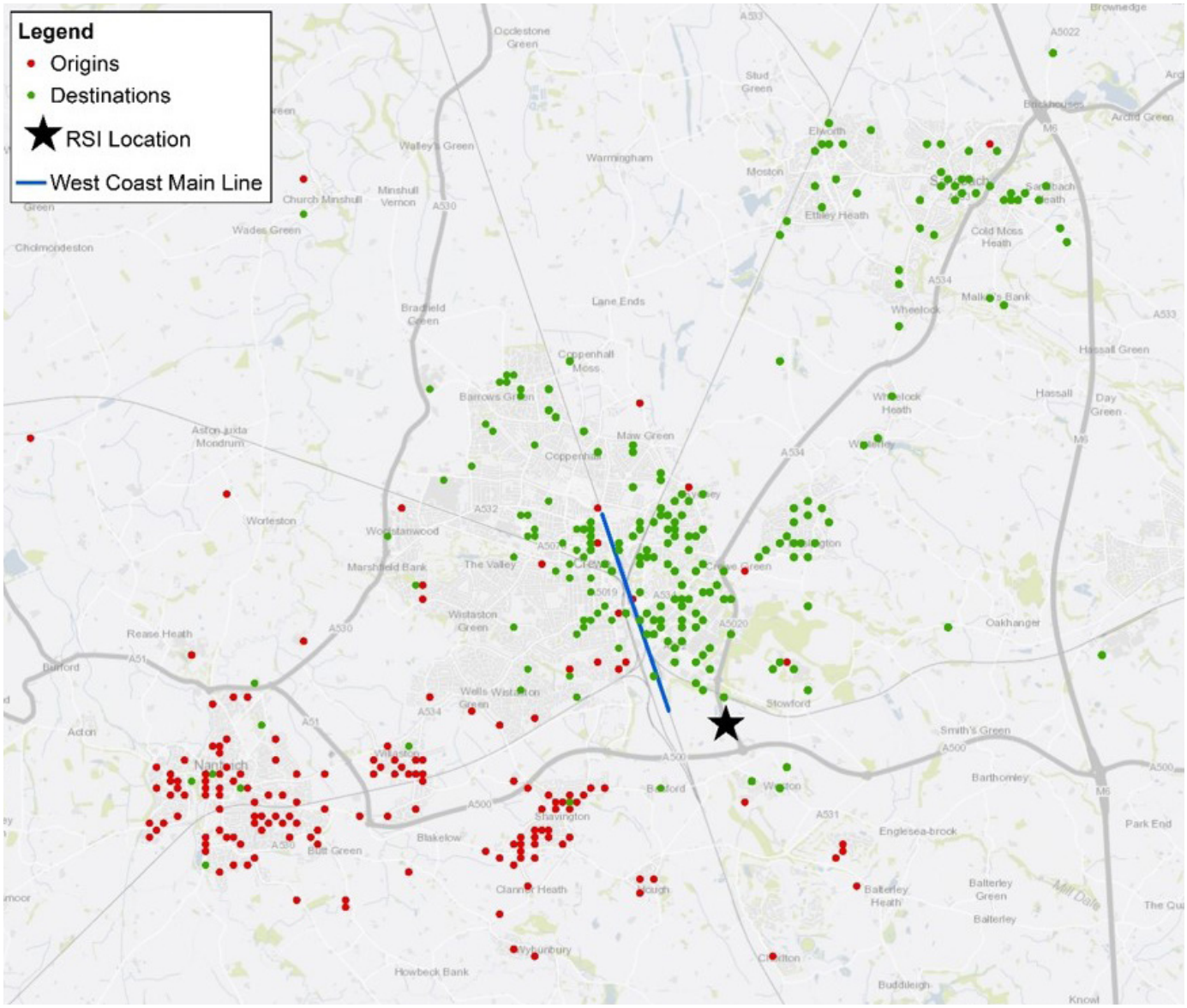


Figure 4.7 shows data provided from road-side interviews conducted along the A5020 northbound indicates that 49.3% of vehicles made cross-town journeys, and 61% of journey destinations were within Crewe, indicating the strategic function of the route.

In conclusion, the data illustrated in Figures 4.5-4.7 shows there is limited scope to push through traffic on to the A500. This suggests that a 'do nothing' approach to Nantwich Road (and the number of crossings of the railway) is unlikely to accommodate future highway demand.

Further work will be required to assess the individual merits of layouts that include a Southern Link Bridge.

Figure 4.7 - A5020 David Whitby Way Northbound



4.4 - CAR PARKING FORMAT

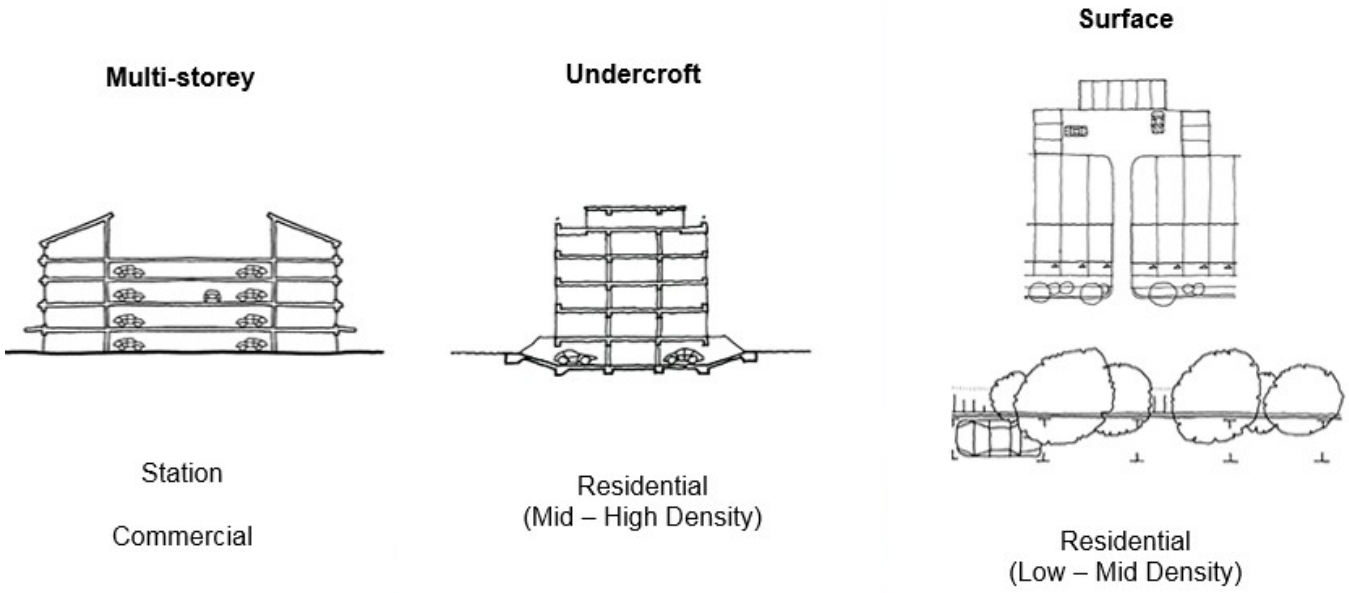
Although detailed plot-by-plot design has not been undertaken at this stage, it is useful to begin to consider the likely, or preferred, format that car parking provision could take.

- Multi Storey Car Parks (MSCP) - multi-storey is deemed as the preferred format for station and commercial uses – ensuring land is used efficiently in potentially higher value areas.

- Undercroft - Mid-to-high density residential developments could consider undercroft parking. Clearly this, or the potential for further underground storeys, will largely be a product of commercial viability.

- Surface - Low-to-mid density residential developments are likely to be more suited to surface car parking, either on- or off-street.

Figure 4.8 - Car Parking Format



4.5- STATION CAR PARKING

An important element in the station design process is the quantity of car parking that is likely to be required – this section provides a summary of the method and outcomes of our car parking forecasting analysis.

The method for estimating station car parking requirements utilises three key data sources: patronage forecasts, mode share forecasts (car-based) and parking accumulation surveys.

Car park accumulation surveys were conducted during the neutral week of 13-17 June 2016. Surveys were focused upon the station car parks (operated by Virgin) located at Pedley Street (including short stay) and Weston Road – these car parks were surveyed as they represent the most comparable user group/ quality/cost of any new additional car parking provided, and therefore have the most comparable level of accumulation.
Accounting for accumulation allows us to better plan for peak demand for car parking, as headline numbers are based upon maximum occupancy. Additionally, projections contain a 5% tolerance above maximum occupancy, to allow for daily fluctuation of patronage.

Figure 4.9 below provides a summary of the required total and additional parking spaces at Crewe, for three forecast years.

This work was undertaken on behalf of Network Rail at GRIP 2, and work is currently being undertaken to bring them up-to-date with the latest HS2 forecast releases.

Figure 4.9 - Station Car Parking Requirements

Year	Current total capacity (Station CPs)	Current long stay capacity	Current short stay capacity	Max Daily occupancy	Long stay (charged)
2027	793	775	18	2436	2394
2033	793	775	18	2664	2619
2043	793	775	18	4166	4095

Year	Short stay (<20 mins free)	Additional spaces required	Additional long spaces required	Additional short stay spaces required
2027	42	1643	1619	24
2033	46	1871	1844	28
2043	71	3373	3320	53

Source: Mott MacDonald / HS2 SCM v5.2b Passenger Demand forecast

4.6- MASTERPLAN CAR PARKING

Presently, the land use mix for the Crewe Campus Masterplan is not finalised. Current aspirations centre on approximately 350,000m^2 of new commercial space. Based on the existing CEC parking standards, 11,670 spaces would be required for this quantum of commercial development. This is based upon the standard of 1 space per 30m^2, and is roughly equivalent to the number of parking spaces currently provided at the Trafford Centre.
This standard is compared to other benchmarks areas below.

Based on the standards above, the requirement for 350km^2 of commercial development is far less substantial in comparable towns. In Milton Keynes this would equate to 7,000 parking spaces, Watford would require 5,830 spaces (around half that of the Crewe requirement) and Reading would require 3,500 spaces.

A number of multi-storey car-parks would be required to accommodate this extensive amount of parking– which is highly onerous, and is likely to have broader implications for the masterplan. As a result of this, parking standards in Cheshire East will need to be reviewed with future development in mind.
Mode share data is a key driver in determining appropriate parking standards for an area. A comparison of method of travel to work mode share between the aforementioned benchmark towns and Crewe is provided in the table below.

This data illustrates several points:

- **Private Car**: The proportion of commute trips by private car is substantially higher in Crewe than in other benchmark areas. In particular, Watford and Reading have significantly lower proportions of car commute (54.2% and 38.3% respectively). This clearly drives the level of requirement of the respective parking standards.

Figure 4.10 - Parking Standards Comparison

Use	Use Class	Chesire East Standards	Milton Keynes (Zone 1) Standards	Watford (Zone 2) Standards	Reading (Zone 2) Standards
Commericial	B1	1 per 30m^2	1 per 50m^2	1 per 60m^2	1 per 100m^2
Residential (2 Bedrooms)	C3	2 spaces	1 space	1 space	1 space
Light Industrial	B2	1 per 40m^2	1 per 100m^2	1 per 50m^2	1 per 100m^2
Hotel	C1	1 per room	1 per 3 rooms	1 per room	0.5 per room

Census 2011 - Method of Travel to Work in Urban Centre

- **On Foot**: Again, both Watford and Reading have significantly higher proportions of commutes made on foot. Increasing residential densities within the masterplan area and town centre will help improve this in Crewe.

- **Bicycle**: A relatively high proportion of commutes are made by bicycle in Crewe. This is explored in more detail in later section

- **Bus**: This mode is significantly less used in Crewe for commutes than the benchmark areas. In particular, Reading has a very strong bus mode share (17.9%) – and is often cited as an exemplar network. Reading Bus is a municipal operator which has several benefits. CEC may wish to explore the potential for new governance arrangements around bus services/operations in Crewe, with powers recently introduced by the Bus Services Act 2017.

- **Train**: Despite having very strong regional and national rail links, this mode is the least used method of travel to work in Crewe. This strengthens the argument that Crewe station is largely an outbound commuter asset (rather than inbound). Clearly this dynamic may change going forward as the economic profile and commuter footprint of Crewe grows – and rail commute times shrink. However, there is also a clear need to strengthen more local links (particularly service frequencies) if rail commuting is to increase.

Fundamentally, without stronger alternatives to private car use (and without major technological innovation), there is unlikely to be any significant shift away from current parking standards.

Figure 4.11 - Mode Share Comparison

Mode	Crewe	Milton Keynes	Watford	Reading
Driving a car or van	72 %	66.8 %	54.2 %	38.3 %
Passenger in car or van	7.5 %	8.2 %	5.1 %	3.7 %
On Foot	7.7 %	8.0 %	15.1 %	18.1 %
Bicycle	6.4 %	2.1 %	1.9 %	3.9 %
Bus, minibus or coach	2.4 %	9.5 %	10.2 %	17.9 %
Other (inc taxi, motorcycle, scooter & moped)	2.1 %	1.7 %	1.3 %	1.1 %
Train, underground, light rail or tram	1.6 %	3.7 %	12.2 %	17 %

4.7- WIDER CAR PARKING

Wider car parking includes elements that would serve both the station and masterplan area, but are located outside of the central urban area. The main objectives for providing wider car-parking is to:

- Reduce congestion around the station and on the highway network into Crewe, thereby reducing the need for major new highway infrastructure investment; and
- Reduce multi-storey car park requirement at Crewe Hub and, therefore, reducing land take and capital cost.

Park & Ride

It is considered that there are three key typologies a Park and Ride system could adopt in Crewe.

Feedback from CEC has highlighted concerns over both journey time disbenefits, and a lack of appropriate sites. Further exploration of specific sites, their associated highway linkages, and potential parking demand, should be undertaken at subsequent stages.

Figure 4.12 - Park & Ride Typologies

Typology	Description	Conclusion
Commuter	A site that is aimed towards commuter use – providing free car parking as a fiscal alternative to the more expensive MSCPs in central areas. Linked by a high-frequency bus service.	This model is viable in other urban areas, and could appeal to a commuter demographic here - though clearly this is predicated upon a major uplift in jobs in the area.
Station	A site that is aimed towards rail users – again providing free car parking as an alternative, and linked by a high-frequency bus service.	Outbound rail users tend to be a deadline chasing demographic, and need absolute certainty over journey time/reliability. For this reason, it is deemed that this model would be relatively unattractive. Additionally, business users make up a significant portion of the demographic at Crewe, and if travelling on expenses, could be less prone fiscal incentives. A further option is to relocate overnight stays to a park & ride site. Currently car parks are up to 37% full overnight in midweek.
Dual Anchor	Relocate significant trip attractors, such as Crewe Alexandra Stadium and/or 'big box' retailers, to an out-of-town site – adjacent to a park and ride facility.	This would create demand for outbound bus trips from the town/station, rather than P&R solely relying on inbound trips to the town/station/campus. This model has been adopted in several other areas including Shrewsbury, Cardiff, Reading & Chester.

Park & Rail

There are many prerequisites for the success of Park & Rail.

- Increased local service frequencies to increase the appeal to commuters as a viable/reliable alternative, particularly on the return leg of journeys;
- Car parking pricing policy to incentivise park and rail use over parking at Crewe Hub;
- Rail ticket pricing policy to promote park and ride and ensure seamless journeys; and
- Improvements to passenger facilities at park and ride sites e.g. staffing, toilet/waiting facilities, and CCTV.

To understand the potential for Park & Rail at local stations several elements have been explored, including rail frequency, forecast passenger demand, drive time catchment, travel time comparison, and land availability. A breakdown of this information is provided below.

Physical potential parking is based purely on adjacent land parcel; it does not take in to account land ownership or planning constraints. Clearly there is a difference between physical potential, and parking that serves Crewe – these spaces could serve journeys to other urban areas like Manchester. Further exploration should determine the likely potential to serve Crewe.

The success of Park & Rail is very much reliant upon increasing rail frequencies, which are currently generally low. Whilst CEC can lobby for this, ultimately it is outside of their control.

Figure 4.13 - Park & Rail : Station Analysis

Station	Current rail frequency	Road vs Rail to Crewe	SRN Access	10-min drive current catchment (forecast demand)	Current parking spaces	Potential parking spaces
Chester	1 per hour	Road 44 min Rail 21 min	M53, A41, A56, A51, A5583, A540	Medium	279	1000
Whitchurch	2 per hour	Road 26 min Rail 20 min	A41, A49, A525	Low	31	250
Wrenbury	2 per hour	Road 20 min Rail 16 min	A530	Low	0	200
Acton Bridge	1 per hour	Road 36 min Rail 16 min	A533, A49, A556	Low	15	55
Hartford	1 per hour	Road 32 min Rail 12 min	A533, A49, A556	Medium	83	160
Winsford	1 per hour	Road 21 min Rail 9 min	A533, A54, A530	Medium	28	250
Alsagar	2 per hour	Road 14 min Rail 10 min	A533, A54, A5011	High	15	75
Kidsgrove	2 per hour	Road 20 min Rail 13 min	A50, A34	High	53	400
Chelford	2 per hour	Road 29 min Rail 23 min	A537, A535	Low	0	270
Holmes Chapel	1 per hour	Road 18 min Rail 14 min	M6, A50, A54, A535	Medium	20	270
Sandbach	2per hour	Road 11 min Rail 10 min	M6, A534, A533	High	45	250

Source: Mott MacDonald

4.8- REGULATIONS

Controlled Parking Zone (CPZ)

There is anecdotal evidence to suggest that currently, commuters who want to avoid paying for parking at Crewe Station instead choose to park in adjacent residential areas. This is an issue that will only become more pronounced as demand grows. Therefore, the introduction of a CPZ has been considered, which would help to manage, enforce and control all on-street parking within a ~10-minute walk of Crewe Station.

The residents parking zone would reduce the parking displacement impacts upon local residents, and help to eliminate the associated friction with commuters. Additionally, it would underpin, and give assurance, over future revenue forecasts.

Likewise, there is anecdotal evidence to suggest that this type of on-street parking is a problem at business units to the south-east of the station. The introduction of a business parking zone would help to ensure that carparks and on-street bays are being used as intended. Alternatively, this could look to introduce short-stay on-street parking for business visitors.

However, a consequence of this would be that it would drive up the requirement for new/additional parking provision. Although it would result in less on-street car parking, capital costs would increase as more provision is needed. Detailed exploration is being considered separately in relation to revenue and funding associated with car parking.

Figure 4.14 -Potential Controlled Parking Zone

Source: Mott MacDonald

HGV Restrictions

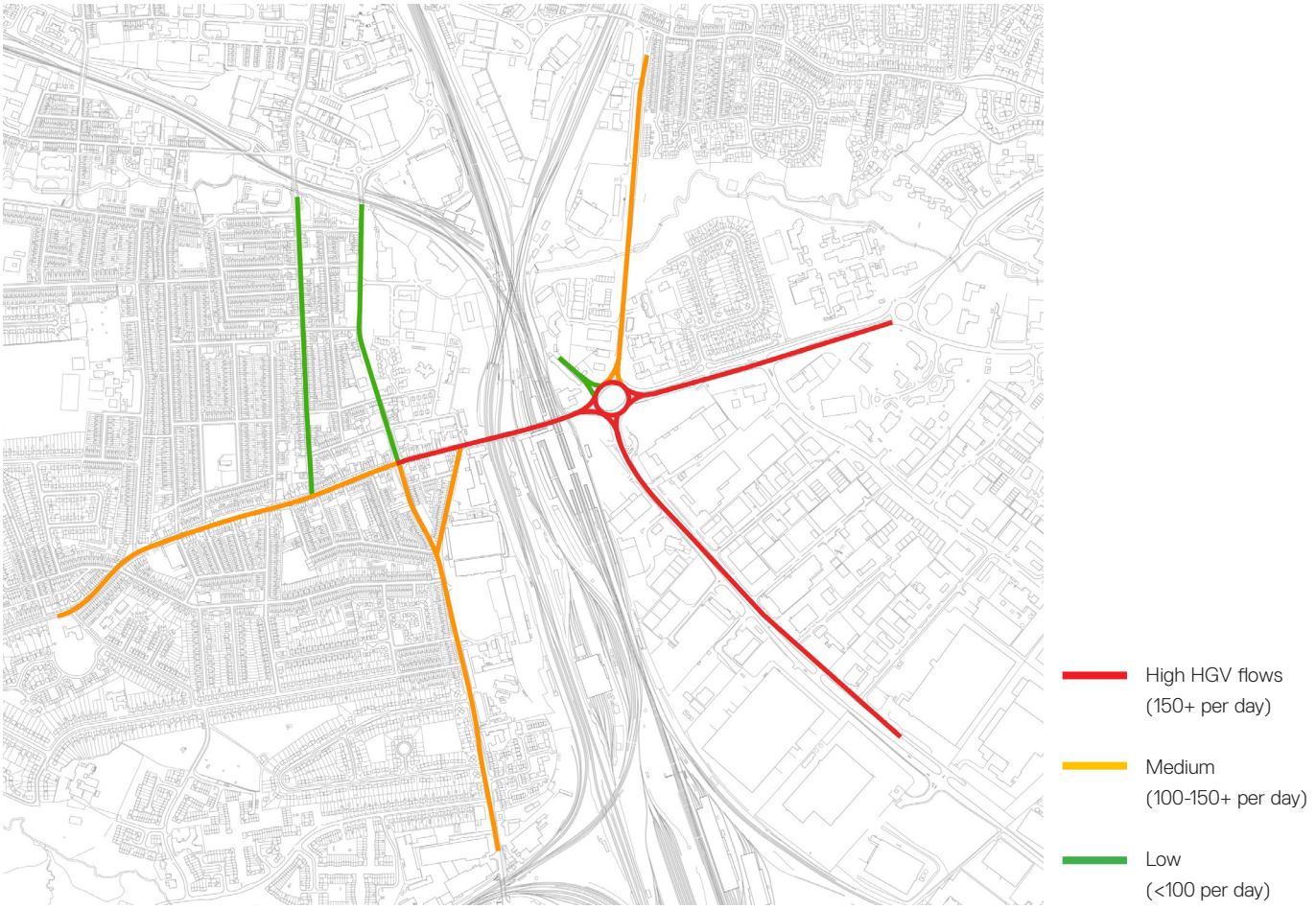
The existing frontage at Crewe Station can be dominated by the presence of HGVs. Currently, Nantwich Road Bridge experiences an average of ~350 HGVs and ~70 articulated vehicles per day, with noise, dust and fear/intimidation all contributing to a negative impact upon 'place' at this key gateway.

In order to make Crewe Station a better place, a 'city centre approach' is required, which would help to reduce issues between people/place and HGVs at the station front.

However, HGV movements along Gresty Road are restricted, as the rail bridge can only accommodate vehicles up to 4.2m. This means that, currently, HGVs making east-west movements must take the route through the centre of Crewe, along Nantwich Road. As the current rail bridge cannot be moved, one option would be to drop the road 80cm to cater for HGV movements towards the A500, potentially allowing HGV restrictions to be implemented on Nantwich Road Bridge (linking to Masterplan 1).

Masterplans 1 and 2 both propose the construction of a southern link bridge, which would help to reroute HGVs from Nantwich Road. Again, this would allow for restrictions on Nantwich Road Bridge.

Figure 4.15 - HGV Flows



Source: Mott MacDonald

4.9- CYCLE NETWORK

Current Patterns

Currently, 5%-8% of Crewe residents currently cycle to work, which is higher than the English average of 4% (Census 2011). Additionally, 4% of all trips to Crewe Station are via bicycle (Network Rail Station Survey 2015)

Census data (2011) indicates that approximately 34% of Crewe residents also work in Crewe, and current forecasts indicate that approximately 40% of HS2 trips from Crewe also originate in Crewe (HS2 SCM v5.2b). As Crewe Urban Area is cyclable within 30 minutes, this 'captive market' presents a real opportunity to increase cycle usage.

Numerous studies indicate that a lack of infrastructure is the main barrier to cycle usage in the UK [1]. Nevertheless, routes with limited or no infrastructure (including Nantwich Road bridge) are well-used by cyclists (below). There is clear potential to build on this

The national government target is to double cycling rates by 2025 (DfT 2016), which in Crewe equates to 10%-16% of residents cycling to work. Better infrastructure will be key to achieving this target – but crucially this is something largely within the scope of local authorities to change.

Masterplan 2 (which would keep Nantwich Road Bridge open only to buses, cycles, and pedestrians) would help to provide better infrastructure at this crucial cycle crossing point.

1 Cycling Embassy of Great Britain: https://www.cycling-embassy.org.uk/wiki/barriers-cycling

Figure 4.16 - Current Cycle Patterns

Source: Propensity to Cycle Tool (PCT.bike)

Future Crewe

Some exploration has been undertaken of the potential impact of increased cycling rates, and the potential reduction in car parking provision. Estimates assume mode shift is equal across user groups and is proportional to mode share at baseline.

This indicates that a tripling of current cycling rates (by 2043) could reduce the total car parking requirement of station and commercial uses by approximately 1,700 spaces – equivalent to one large MSCP.

Figure 4.17 - Nantwich Road Bridge

Figure 4.18 - Impact of Increased Cycling Rates

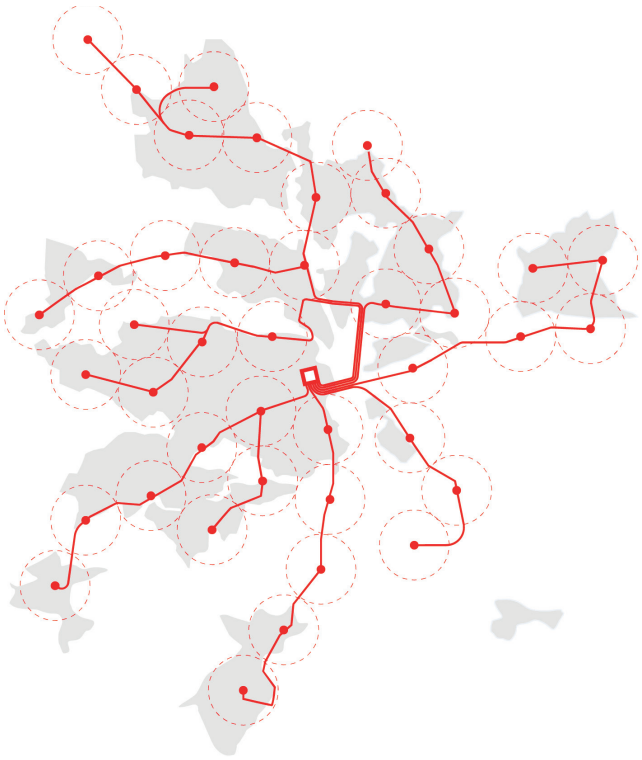
Station Patronage		Trips (1-way)	Station Car Parking Reduction:
Current Mode Share	4%	230	n/a
Future Scenario: (2037 - 5-7tph)	↑ 12%	1,420	↓ -400 spaces

Crewe Commuters		Trips (1-way)	Station Car Parking Reduction:
Current Mode Share (Live & work in Crewe)	10%	1070	n/a
Future Scenario: (2037 - 5-7tph)	↑ 30%	3,220	↓ -1,300 spaces

Electric Bus Network

A key transport aspiration agreed with CEC was 'every home within 400m of a high-frequency electric bus network'. This would provide a step-change in accessibility levels across the wider urban area. However, as bus services in Crewe operate in a deregulated market (where local authorities have little say over routes or frequencies) the ability to deliver this aspiration is currently limited. As such, it is recommended that new governance structures and powers, recently introduced by the Bus Services Act 2017, be explored by CEC.

Figure 4.19 - Bus Network

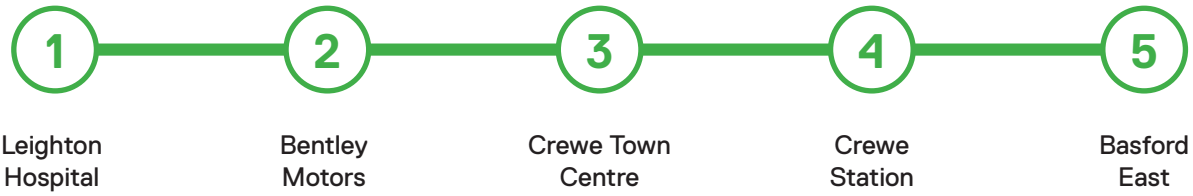


Rapid Transit Loop/Line

The previous CEC study features an aspiration for a 'rapid transit loop' connecting station and town. However, it is conserved that the town centre and railway station have quite separate functions, and the demand for movement between the two is deemed limited. Moreover, a 'loop' is unlikely to help solve the fundamental issues of getting rail users to/from the station, or commuters to/from campus. Instead, there is likely to be more value (in transportation terms) to a radial route (or line) connecting Crewe Campus (and other key assets) with the wider urban area.

Whilst a mode is not defined at this stage, options could range from a bus priority route to a light rail line. This, and potential demand, should be further explored.

Figure 4.20 - Rapid Transit Line



Summary & Actions

Proposed interventions associated with the transport strategy are summarised below, along with the further actions that are required.

Figure 4.21 - Summary & Actions

Intervention	Conclusion (to date)	Action
Station / Masterplan Car Parking	Current steer is to cater for demand. However, current parking standards result in an onerous amount of parking, which is not conducive to development aspirations for Crewe Campus.	Review wider urban area transport strategy and address mode share - in order to drive down the car parking requirement to more sustainable levels.
Park & Rail	There is clear potential for expansion of facilities at several local stations, but the success of this is partly reliant upon increasing local rail frequencies – which CEC have little control over.	Continue to work with partners such as Network Rail, Department for Transport and Constellation Partnership.
Park & Ride	Whilst this scheme could have merit, it is unlikely to be a major contributor to reducing parking demand in central areas.	Undertake more detailed exploration of potential sites, corridors, and demand.
Rapid Transit Line	Not enough is known about the nature of this scheme to provide an initial conclusion, but the level of demand will be critical to feasibility.	Explore routes, infrastructure, and potential demand.
High Frequency Bus	Stakeholders are keen, but there are concerns over how this can this be delivered in a deregulated market.	Explore regulatory environment and opportunities.
Segregated Cycleway	Current infrastructure is limited, but there is scope to build upon encouraging cycle rates in Crewe. Crucially, this is largely within the scope of CEC to deliver (rather than third parties).	Develop a cycling infrastructure plan to help break down the barriers to cycle usage, and promote it as a mode of travel.

Source: Mott MacDonald

4.10- THE SOUTHERN LINK BRIDGE

Any proposed link bridge would be located south of the existing Crewe station. The concept of a new vehicle connection to the south of the station is considered as a possible solution to redirecting traffic follows away from the existing congested crossing points to more suitable arterial routes. The impact of the Southern Link Bridge is unknown and each masterplan explores a strategy that either uses this new connection, does not use this connection, or uses it in combination with the existing Nantwich Road connection. The current indicative location is sited to the south of the station to avoid large spans across Crewe North Junction and create a better relationship to the A500. Its location provides the ability to redirect traffic away from the centre of the masterplan area and create a south/east to north/west axis (M6, A500 and Basford /Town centre, Bentley and Leighton) across Crewe. Further work is required to ascertain the benefits of the new connection and validate its location.

In addition it is currently unknown how many piers within the railway corridor can be accommodated, this will be subject to a number of design options at the next stage of design. Potential impact on the railway will be a key consideration.

Piers may not be permitted within the Network Rail land as this may limit scope for future development and operations. In this case, the required bridge span would be approximately 210m.

If piers are permitted within the Network Rail land, and based on the constraint that bridge piers are not permitted within 4.5m of any rail infrastructure, this would result in a three span bridge, as shown below.

In either case, the bridge will need to be higher than the surrounding ground level in order to provide sufficient clearance beneath the bottom of the bridge and the rail infrastructure. The details will depend on the form of bridge that is chosen but an approach ramp will be required on either side of the bridge to tie back in to local ground level.

Further work is required to establish the impact on Gresty Road and Weston Road. Both of these roads will experience a significant change in their use and nature. Options should be explored how to reduce their impact on local residential properties.

Figure 4.22 - Indicative bridge construction

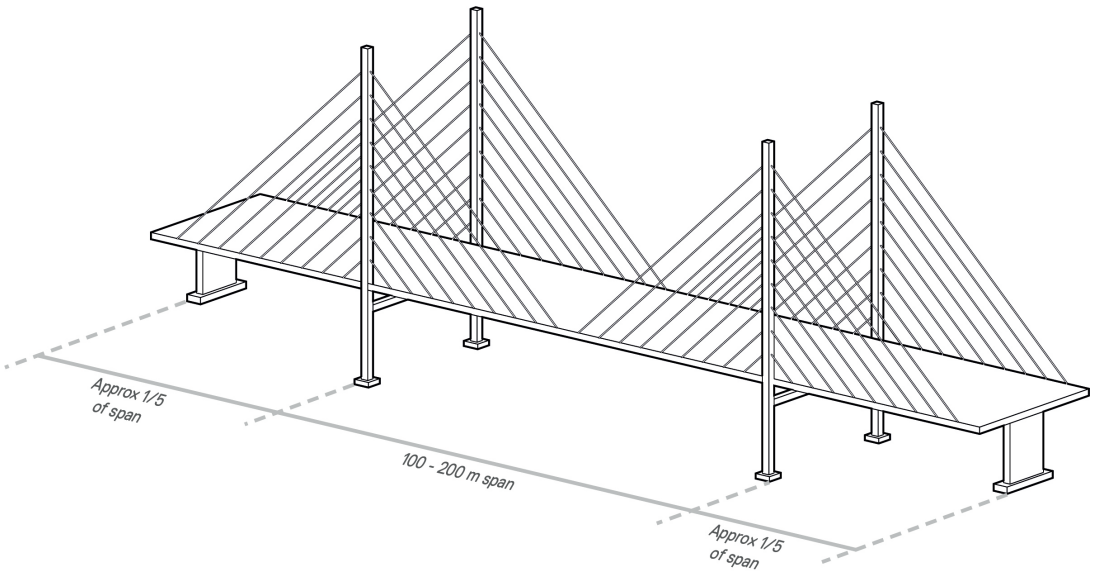
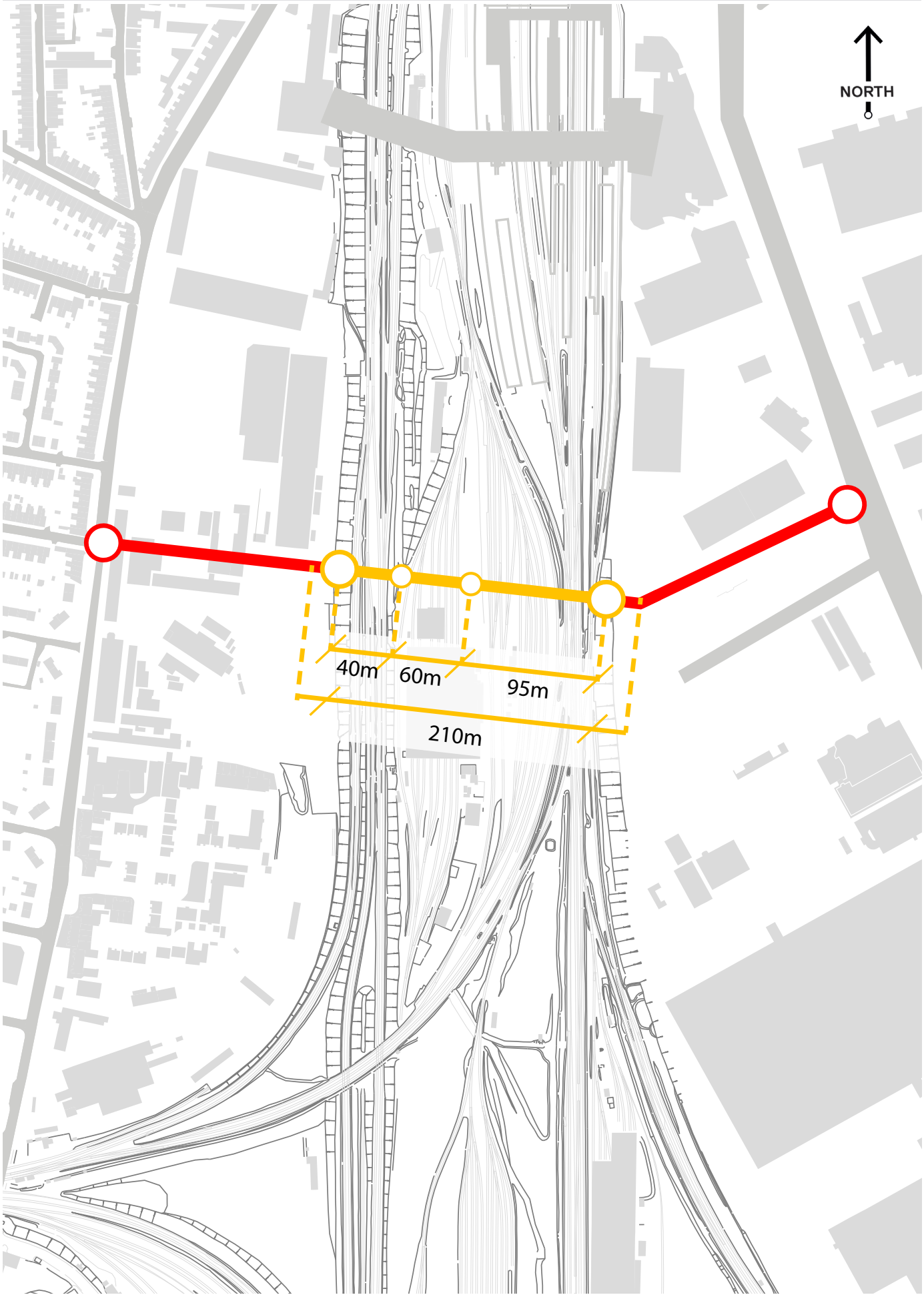


Figure 4.23 - Indicative bridge alignment



5

MASTERPLAN 01

RED LINE / GREEN LINE

5.1
MASTERPLAN 01
RED LINE

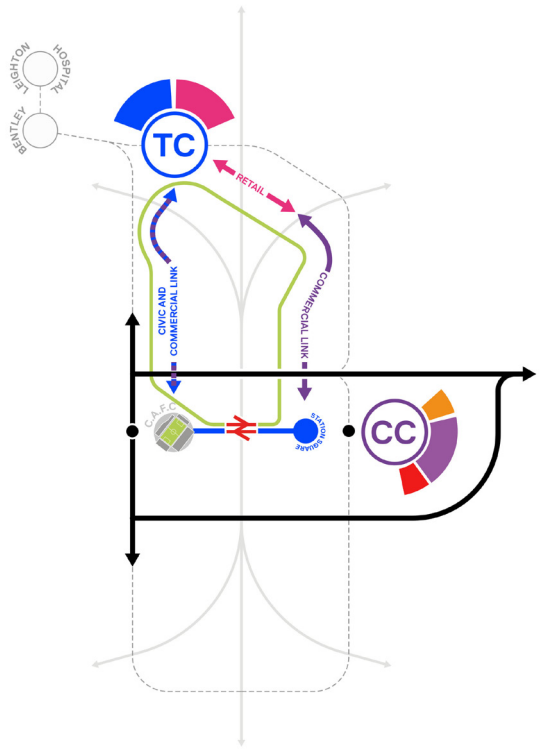
NORTH

Two connected centres

Masterplan one seeks to create a complementary relationship with the existing town centre whilst attempting to provide a commercial link via Mill Street back to the station. The key elements of this masterplan are as below:

- **Existing town centre** – Retains civic and retail functions
- **New campus centre** – Commercial and high density residential
- **Connection between centres** – functionally linked with commercial and retail
- **Main route alignment** – Nantwich road retained as a vehicle route with the addition of the Southern link bridge
- **Pedestrian and cycle links to town centre** – Green link with three crossing points
- **Football stadium** – Retained
- **Mill street** – Used as primary route between station and existing town centre

Figure 5.1 - Masterplan 01 framework diagram



Strategic moves

Strategically the station forms a key public east / west route. Exiting on the west allows station users to travel up towards the town centre along Mill Street. As this route is considered the link between station and existing town centre, its current condition requires significant upgrading. For this particular route a commercial and retail frontage is desired along the length of Mill Street and the journey into the town centre. In this instance the green route is used to provide separation from the road and create an pedestrian and cycle friendly route into town.

In Masterplan 01 the Town Centre and Retail Park are not envisaged to change significantly. The masterplan looks to maintain the existing functions of the town centre and create a complimentary centre next to the station focused on commercial and high density residential land uses. A new regional attractor (such as an Arena) is located to the south of the southern link bridge.

Figure 5.2 - Masterplan 01 context

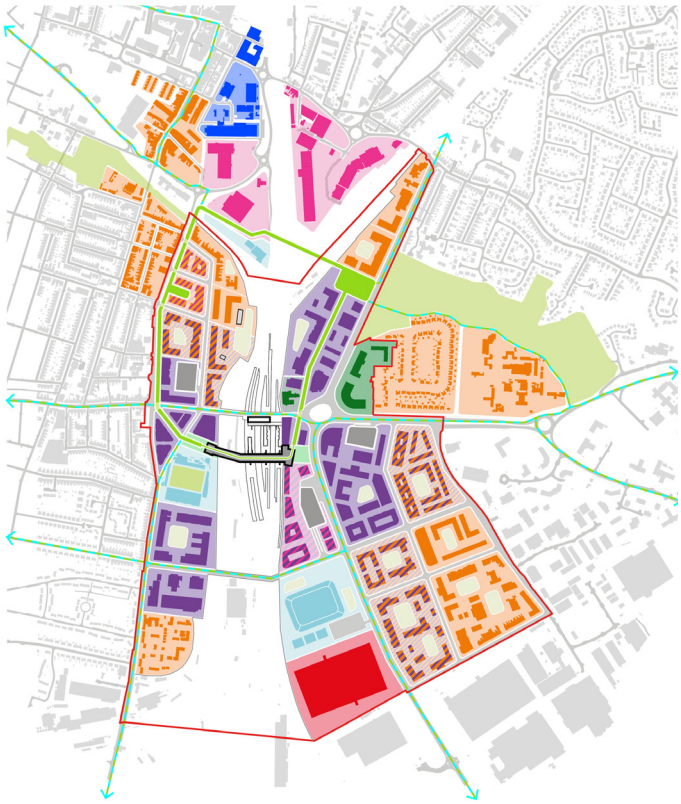
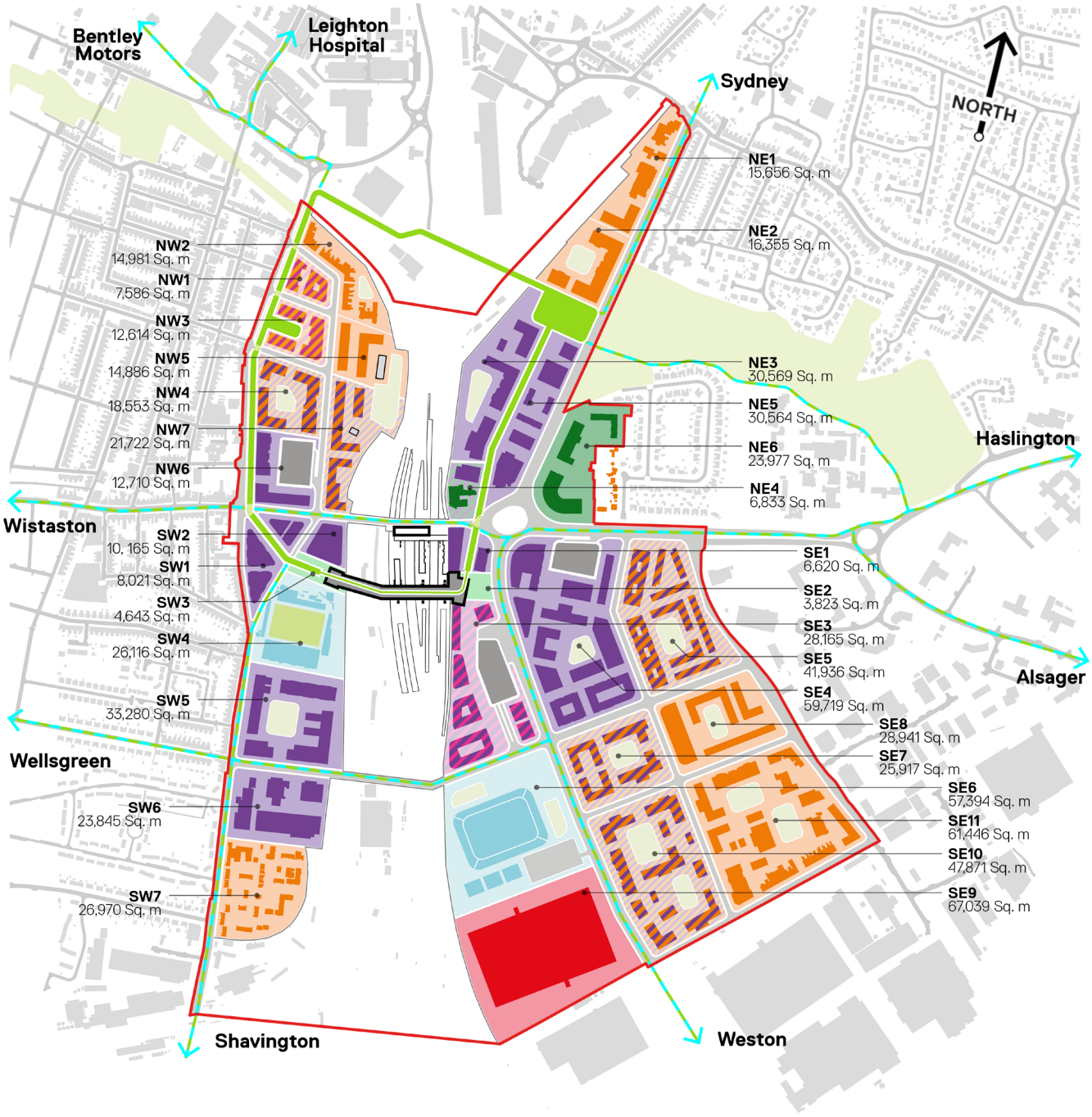
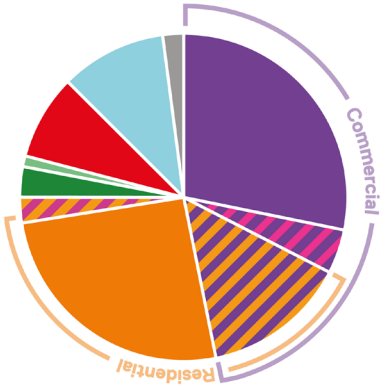


Figure 5.3 - Masterplan 01 land use



	Use Class	Plot Area (m²)
Commercial	A2 / B1	208,873
In-town Retail	A1 / A3 / A4 A5	0
Out-of-town Retail	A1 / A3 / A4	0
Residential	C3 / C4	179,235
Lesuire & Culture	D2	83,510
Light Industrial	B8	67039
Hotel	C1	23,977
Civic	D1	0
Public Realm	N/A	8,466
Hotel & Commercial & Retail & Retail	Mix	0
Hotel & Commercial & Civic	Mix	0
Lesiure & Cultural & Commercial	Mix	0

	Use Class	Plot Area (m²)
Residential & In-town Retail	Mix	20,200
Residential & Out-of-town Retail	Mix	0
Residential & Commercial	Mix	155,999
Hotel & Commercial	Mix	0
Commercial & In Town Retail	Mix	28165
Civic & In Town Retail	Mix	0
Lesiure & Cultural & Out-of-town Retail	Mix	0
Car Parking	Mix	16,480
Public transport only Across Nantwich Rd	N/A	N/A
Cycle Highways	N/A	N/A



Land use

As can be seen on the left hand page, the primary commercial areas are centred around the rail corridor and adjacent each station entrance, where land is best connected. Surrounding the commercial areas are large blocks of mixed residential and commercial space leading into a full high density residential area to the south. Along the north / south green links a connection is made between the station and existing town centre, by drawing up commercial and retail functions along this axis. On the east high density prime residential areas are created between the railway corridor and Mill Street. It is not considered ideal to boarder the rail corridor with residential units, however this is commonplace around Crewe.

The football stadium and the southern link bridge present physical obstacles to the south. The football stadium prevents the station car park on the west being conveniently located and constrains the deck landing position on the western embankment. The Southern Link Bridge is a thoroughfare that reduces the desirability of commercial uses beyond it, in this instance it is believed a regional facility such as a multi-purpose Arena would be suited to this location given its proximity to the station and main vehicle routes.

Costing

The table below details the high level costing exercise that has been undertaken for the key local authority led infrastructure. It is key to note that this option includes a pared back station design, a compact Green link, the Southern Link Bridge is in place, whilst also maintaining the station in its current location.

Figure 5.4 - Masterplan 01 - Costing table - Mott Macdonald

Component	Masterplan 01	Car parks	
Direct construction works			
Station Buildings and associated works	73,946,350		
Work to Existing Buildings	4,816,000		
Gresty Road Stadium relocation	-		
External works	3,086,350		
Southern Link Bridge	26,836,700		
Green loop, the cycle loop and the residents / business permit parking zones	13,018,672.14	57,500,000	
Miscellaneous	4,339,000.00		
Site Clearance and Preparation Works	418,145		
Total	126,461,217		
Indirect construction costs			
Preliminaries	37,938,365	17,250,000	*Allowed 30% of Direct Construction cost
Overheads and profit	21,371,945	9,717,500	*Allowed 13% of Direct Construction cost
Project / Design Team Fees and Other Project Development Costs			
Design Fees	15,175,346	6,900,000	*Allowed 12% of Direct Construction cost
Client Management Costs	15,175,346	6,900,000	*Allowed 12% of Direct Construction cost
Environmental Mitigation	4,802,997	2,183,850	
Possession/Isolation	5,058,448	0	*Allowed 15% of Direct Construction cost
Schedule 4	18,969,182	0	*Allowed 15% of Direct Construction cost
Total	348,186,588		
Other costs			
Land purchase /rental	Excluded		
Costs associated with DCO's or TWOA	Excluded		
Optimism Bias	Excluded		
Risk/Contingency	146,971,709		*Allowed 60% of total cost
Combined Total	391,924,557	167,277,160	

NOTE: High level costing information has been conducted within the scope of the 'Funding and Financing Strategy' report. The figures presented are not NR assured.

5.2
MASTERPLAN 01
GREEN LINE

The green line area is an approximate 44 hectare side that sits east / west across the station. The tallest buildings and those which are considered landmark plots are located in this area.

There is an underlying planning rationale to the green-line area, with Masterplan 01 exploring a series of introverted blocks, each with their own square. The square within each block provides amenity and a unique character. Leading out of the eastern entrance and taking the eastern route provides a connection to the existing Crewe Business Park, whilst travelling south provides a processional route to the 'Arena' via a wide underpass as not to conflict with the Southern Link Bridge.

The western entrance is considered to be the 'local' entrance serving the majority of the residential communities in Crewe and with the closest links to the Town Centre. When exiting via the western entrance station users and the public are directed to the north west, over Gresty Road and through a new tree lined space onto Mill Street. Once at Mill Street the green route continues north into the existing town centre.

Figure 5.6 - Building height illustration

Figure 5.7 - Masterplan 01 Green line planning

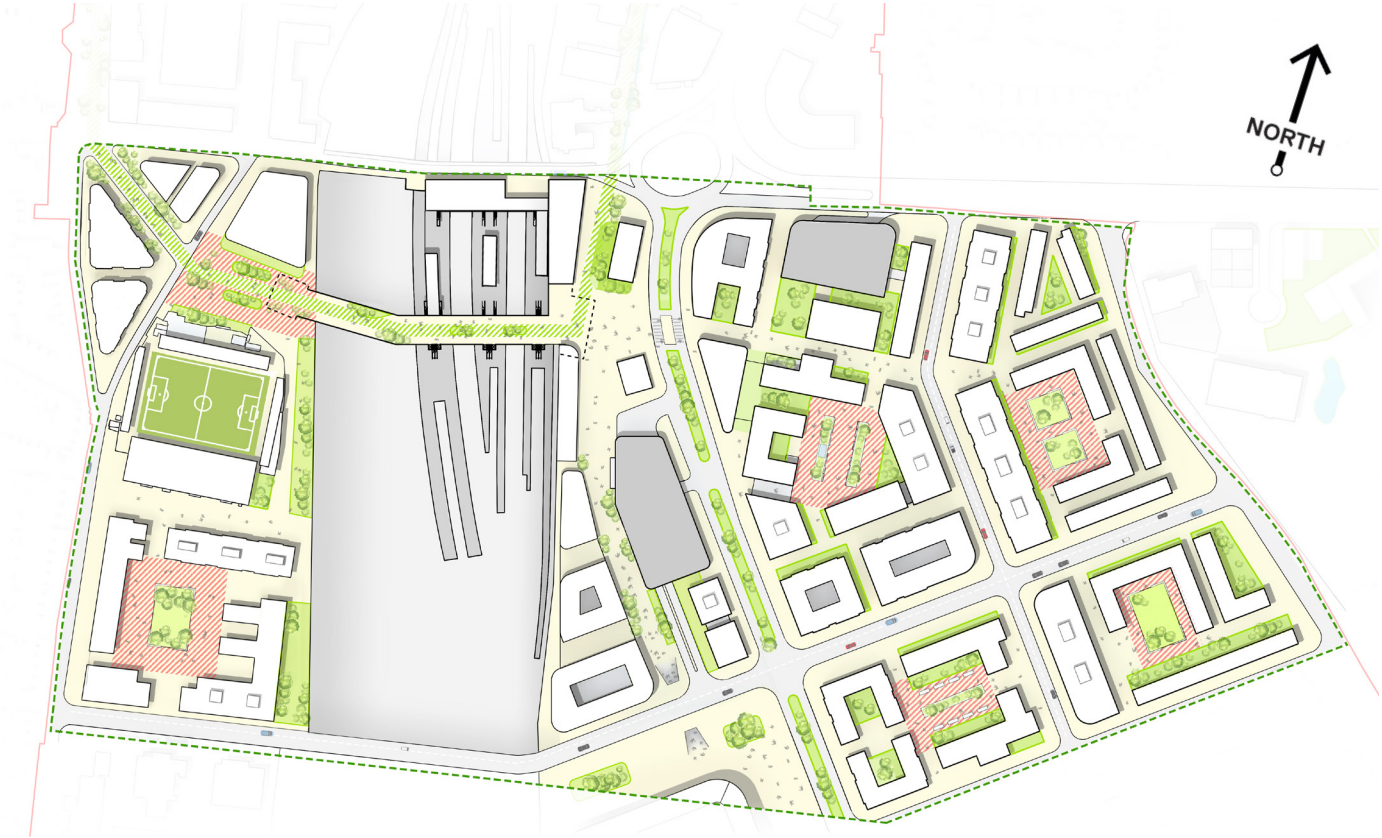
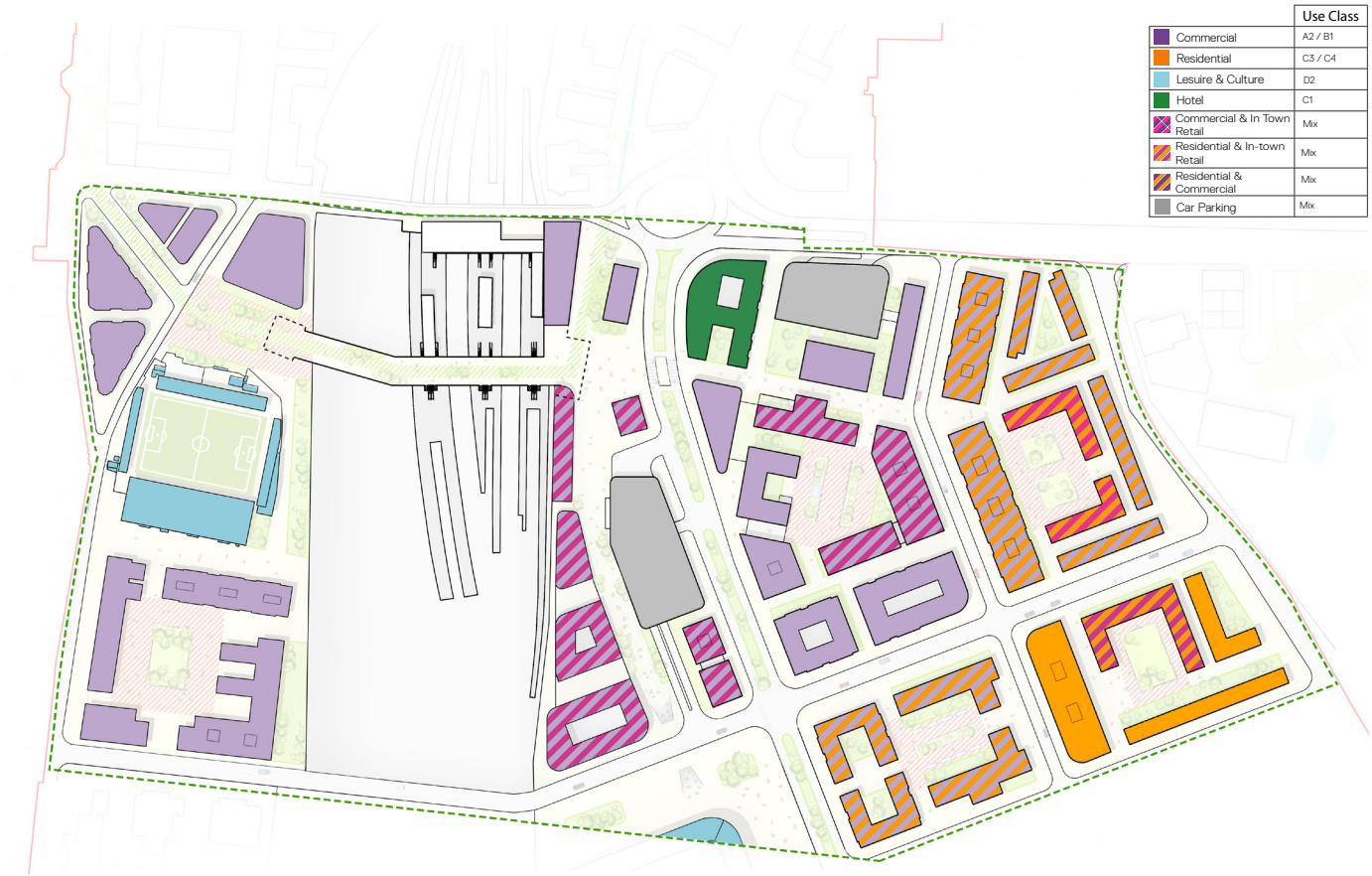


Figure 5.8 - Masterplan 01 Green line building



MASTERPLAN 02

RED LINE / GREEN LINE

5.3 MASTERPLAN 02 RED LINE

A new Town Centre

Masterplan two delivers the biggest physical intervention within the red-line with an aim to maximise benefits by improving connectivity and prioritising public transport. Crucially this masterplan considers the Crewe Campus centre to represent a shift in the centre of gravity in Crewe. In this instance the existing town centre and its civic and retail functions remain to serve Crewe and the residents. The town centre would continue to provide the typical high street environment with local retail and services at it's heart. In the Crewe Campus centre, it is envisaged that civic functions with a regional reach, retail and restaurants would relocate to serve the commuter and office based demographic in this location.

- **Existing town centre** – Retains functions
- **New campus centre** – Commercial and high density residential plus some civic and high street retail and leisure functions
- **Connection between centres** – No functional link
- **Main route alignment** – Nantwich road retained as public transport only, Southern Link Bridge implemented
- **Pedestrian and cycle links to town centre** – Green link with five crossing points
- **Football stadium** – Relocated to Basford East with out of town
- **Mill street** - Primary north/south vehicle link into the existing Crewe centre, pedestrians and cyclists using the inboard green link.

Strategic moves

In this masterplan the green loop is more expansive offering pedestrian and cycle connections at multiple locations across the rail corridor, significantly increasing its permeability. The station design is more permeable, establishing new mezzanine levels running north / south and allowing for people to move between the deck and Nantwich road.

Nantwich Road is re-purposed as a green route, representing a step change in central Crewe by prioritising key route for pedestrians, cyclists, and public transport. In changing the priority of key routes an alternative orbital vehicle route is established that uses the Southern Link Bridge as its main east / west artery, and Gresty Road / Mill Street as the main north / south artery into Crewe. The north south route will experience a significant change in character given its new prominence, it is possible with the football stadium relocated to widen this artery and provide a more amenable space alongside the road and boarding the residential areas.

Figure 5.9 - Masterplan 02 framework diagram

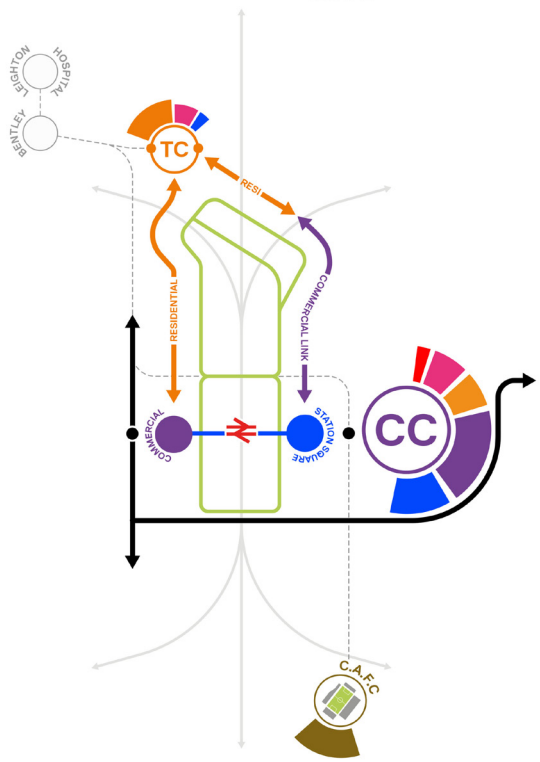


Figure 5.10 - Masterplan 02 context

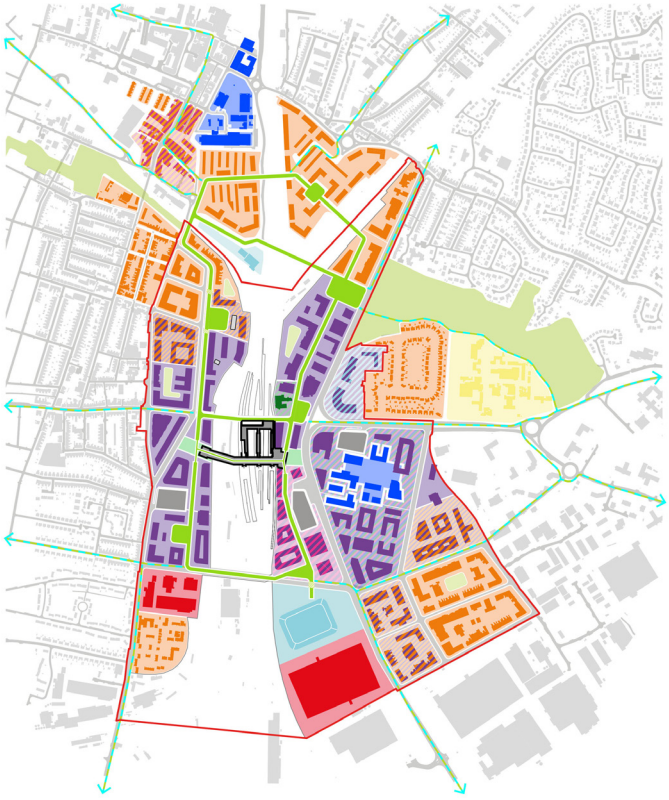
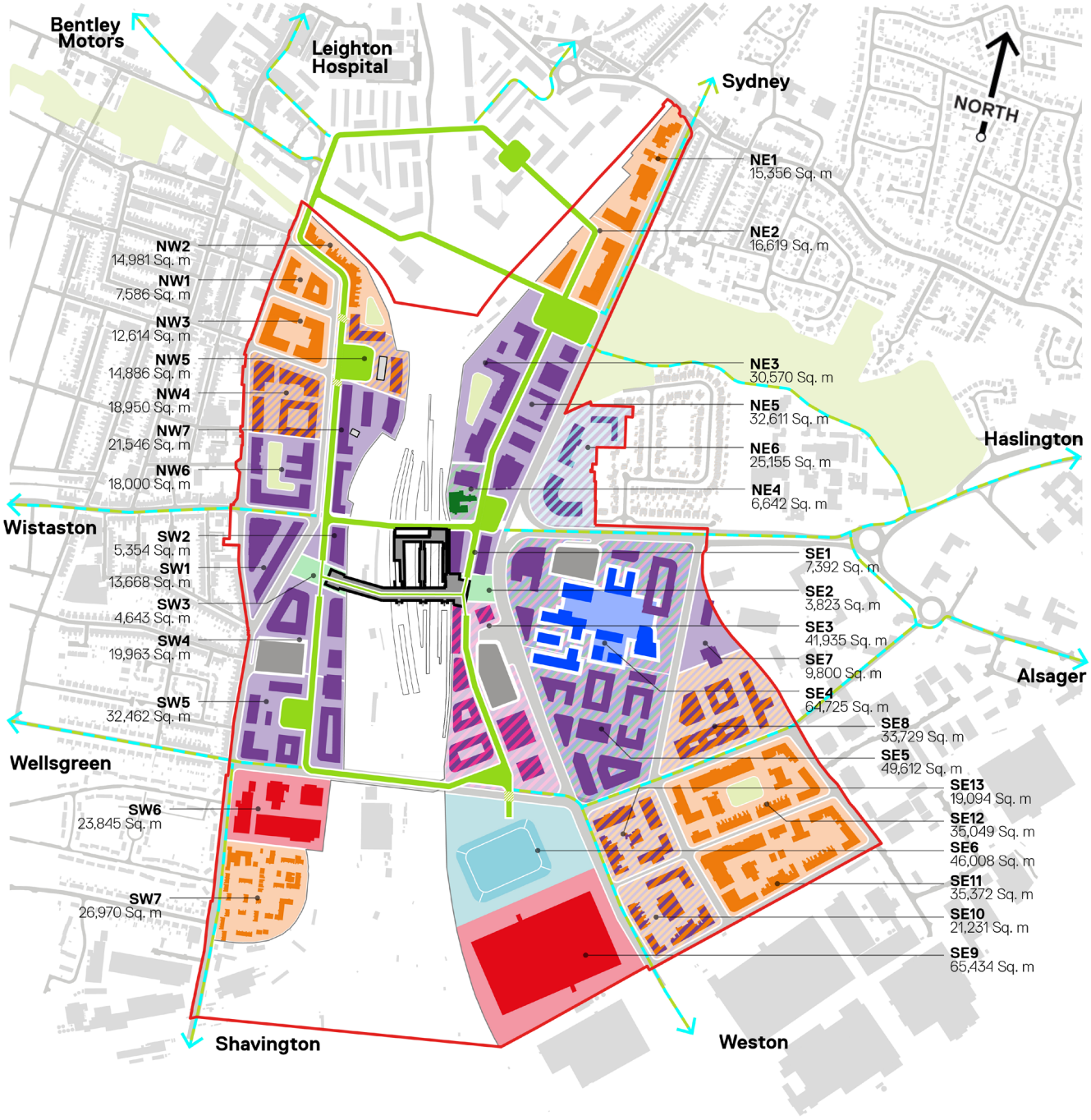
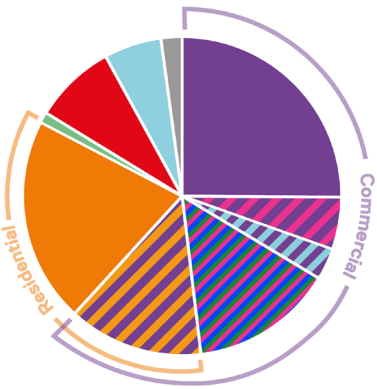


Figure 5.11 - Masterplan 02 land use



	Use Class	Plot Area (m²)
Commercial	A2 / B1	183,974
In-town Retail	A1 / A3 / A4 A5	0
Out-of-town Retail	A1 / A3 / A4	0
Residential	C3 / C4	164,547
Lesuire & Culture	D2	46,008
Light Industrial	B8	89,279
Hotel	C1	0
Civic	D1	0
Public Realm	N/A	8,466
Hotel & Commercial & Retail	Mix	0
Hotel & Commercial & Civic & Retail	Mix	114,337
Lesiure & Cultural & Commercial	Mix	25,155

	Use Class	Plot Area (m²)
Residential & In-town Retail	Mix	0
Residential & Out-of-town Retail	Mix	0
Residential & Commercial	Mix	107,880
Hotel & Commercial	Mix	0
Commercial & In Town Retail	Mix	41,935
Civic & In Town Retail	Mix	0
Lesiure & Cultural & Out-of-town Retail	Mix	0
Car Parking	Mix	16,848
Public transport only Across Nantwich Rd	N/A	N/A
Cycle Highways	N/A	N/A



Land use

As can be seen on the left hand page, the station sits at the heart of the commercial area. The station provides the vital link between commercial parcels of land on the east and west of the rail corridor. Notably, this masterplan seeks to relocate some of the civic and retail functions that exist within the town centre to the new Crewe Campus centre on the east of Crewe.

The Green Link seeks to provide multiple pedestrian and cycle crossing points across the rail corridor. In this masterplan the green link sits inboard of Mill Street and the edge of the railway. This key pedestrian and cycle link into town is animated by a commercial and residential frontage whilst the main northern link for vehicles remains on Mill Street.

With the football stadium relocated to Basford East, Gresty Road and Mill Street can be widened, to accommodate greater traffic demand whilst introducing a larger buffer to residential areas. This masterplan also acknowledges a change in the land value for parcels of land below the southern link bridge, highlighting them for light industrial use, whilst the corner plot has been earmarked for a key asset. The key asset should be a regional attractor such as an arena or event space. This location builds on the regional connectivity of the rail, whilst it is located on the major vehicle routes to the south of Crewe Station.

Costing

The table below details the high level costing exercise that has been undertaken for the key local authority led infrastructure. In this instance the station design is more ambitious (refer to the Station Design section), the Green Link is larger and provides more crossing points, the southern link bridge is in place, whilst the football stadium is relocated.

Figure 5.12 - Masterplan 02 - Costing table - Mott Macdonald

Component	Masterplan 03	Car parks	
Direct construction works			
Station Buildings and associated works	80,863,100		
Work to Existing Buildings	5,980,000		
Gresty Road Stadium relocation	39,702,500		
External works	3,086,350		
Southern Link Bridge	26,836,700		
Green loop, the cycle loop and the residents / business permit parking zones	20,447,399	57,500,000	
Miscellaneous	2,307,250		
Site Clearance and Preparation Works	534,152		
Total	179,757,451		
Indirect construction costs			
Preliminaries	53,927,235	17,250,000	*Allowed 30% of Direct Construction cost
Overheads and profit	30,379,009	9,717,500	*Allowed 13% of Direct Construction cost
Project / Design Team Fees and Other Project Development Costs			
Design Fees	21,570,894	6,900,000	*Allowed 12% of Direct Construction cost
Client Management Costs	21,570,894	6,900,000	*Allowed 12% of Direct Construction cost
Environmental Mitigation	6,827,188	2,183,850	
Possession/Isolation	7,190,298	0	*Allowed 15% of Direct Construction cost
Schedule 4	26,963,617	0	*Allowed 15% of Direct Construction cost
Total	348,186,588		
Other costs			
Land purchase /rental	Excluded		
Costs associated with DCO's or TWOA	Excluded		
Optimism Bias	Excluded		
Risk/Contingency	208,911,953		*Allowed 60% of total cost
Combined Total	**557,098,541**	**167,277,160**	

NOTE: High level costing information has been conducted within the scope of the 'Funding and Financing Strategy' report. The figures presented are not NR assured.

5.4
MASTERPLAN 02
GREEN LINE

There is an underlying planning rationale to the green-line area, with Masterplan 02 exploring a series of linked public squared stretching from west to east. On the west of the rail corridor a local square provides a focal point for the development whilst intersecting with the Green Link for those local journeys into the town centre. To the east the public square creates a central point for the new Crewe Campus development and furthest to the east a potential link to the existing Crewe business Park. However, the largest of all the civic public squares sits above the station. It is envisaged that an urban response of this manner will help reverse the town's relationship with the station, rather than being a barrier, it will be at the heart of the town's regeneration.

With the football stadium no longer present the land on the west of Crewe become better connected and of high value, whilst car parking can be located in close proximity to the entrance. On the east of the rail corridor the new regional attractor facility (Arena / event space) sits to the south, connected by the green link and a small under pass as not to inhibit vehicle flows on the Southern Link Bridge.

Figure 5.13 - Masterplan 02 building heights

Figure 5.14- Masterplan 03 Green line planning

Figure 5.15 - Masterplan 02 Green line building use

MASTERPLAN 03

RED LINE / GREEN LINE

5.5
MASTERPLAN 03
RED LINE

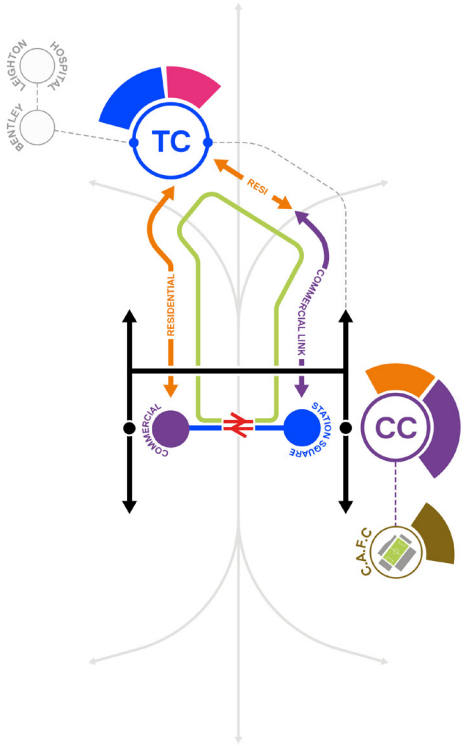
NORTH

Two independent centres

Masterplan three delivers creates two independent centres in Crewe, one that serves the locality and on that serves the region. This masterplan does not seek to link them functionally as in Masterplan 01, or shift the centre of gravity as in Masterplan 02.

- **Existing town centre** – Reinforces civic, retail and leisure uses
- **New campus centre** – Commercial and high density residential
- **Connection between centres** – No functional link
- **Main route alignment** – Nantwich road retained as public transport only, Southern Link Bridge implemented
- **Pedestrian and cycle links to town centre** – Green link with three crossing points
- **Football stadium** – Relocated to the east of the railway corridor
- **Mill street** – Primary north/south vehicle link into the existing Crewe centre, pedestrians and cyclists using the inboard green link

Figure 5.16 - Masterplan 03 framework diagram



Strategic moves

In this masterplan the relocation of the stadium serves to allow the north / south route along Mill Street to be widened whilst providing an opportunity to relocate the stadium within the campus area. The green loop serves to connect the station, the existing green areas and the town centre in a high amenity pedestrian and cycle environment. However, this is very constrained by Nantwich Road traffic, if this solution was to be implemented grade separation of vehicles and the green loop should be explored.

Without the southern link bridge the land to the south of the station is not severed allowing for a continuation of commercial land use. Between the town centre and the station sits high density residential areas, further reinforcing the residential nature of that area whilst providing a new type of living accommodation in close proximity to both centres.

Figure 5.17 - Masterplan 03 context

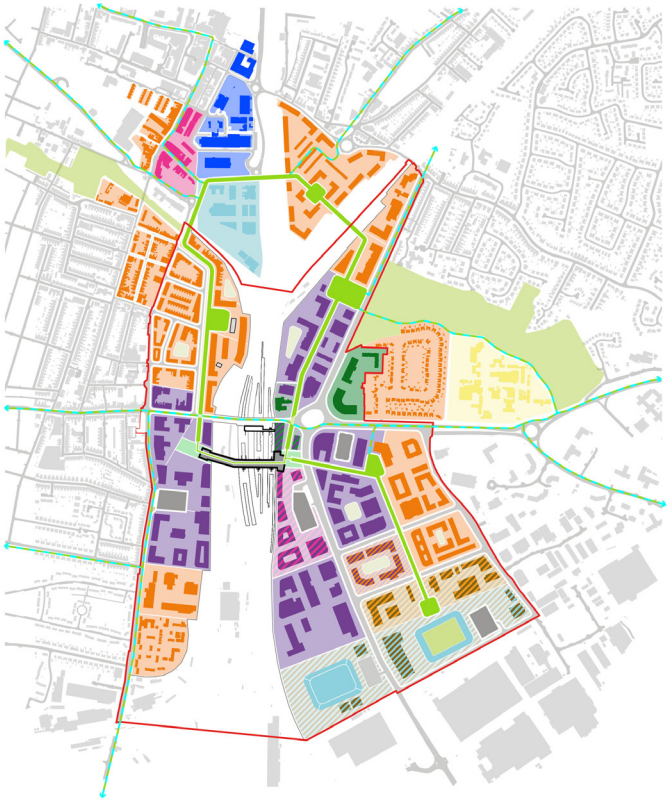
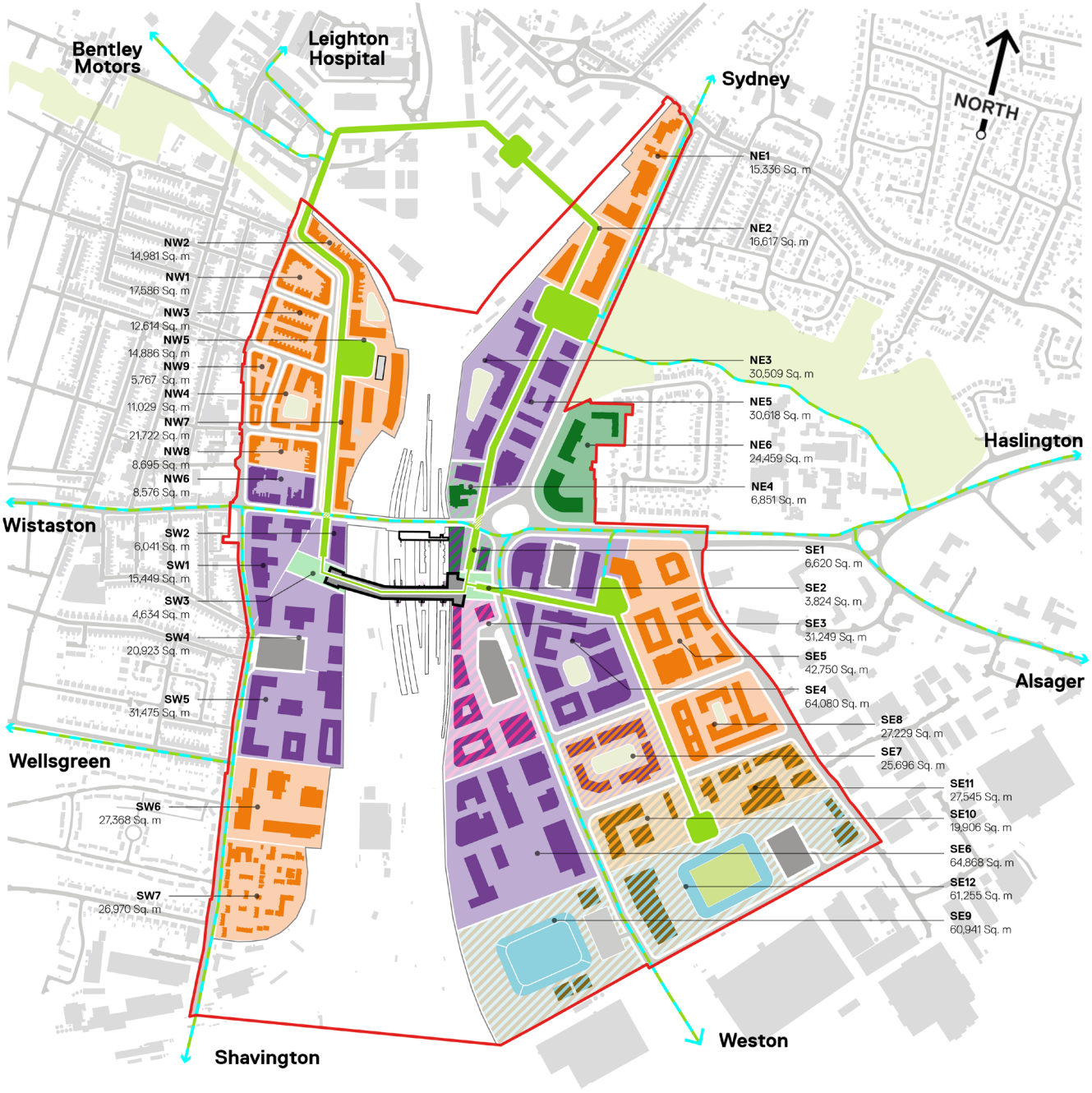
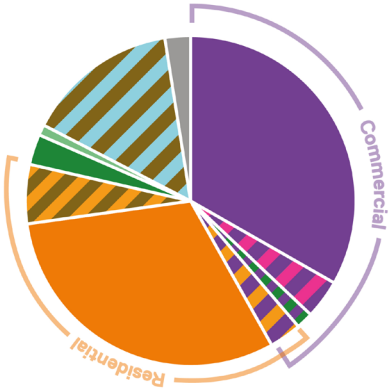


Figure 5.18 - Masterplan 03 land use



	Use Class	Plot Area (m²)
Commercial	A2 / B1	272,539
In-town Retail	A1 / A3 / A4 A5	0
Out-of-town Retail	A1 / A3 / A4	0
Residential	C3 / C4	231,597
Lesuire & Culture	D2	0
Light Industrial	B8	0
Hotel	C1	24,459
Civic	D1	0
Public Realm	N/A	8,458
Hotel & Commercial & Retail	Mix	0
Hotel & Commercial & Civic & Retail	Mix	0
Lesiure & Cultural & Commercial	Mix	0

	Use Class	Plot Area (m²)
Residential & In-town Retail	Mix	0
Residential & Out-of-town Retail	Mix	47,451
Residential & Commercial	Mix	25,696
Hotel & Commercial	Mix	13,471
Commercial & In Town Retail	Mix	31,249
Civic & In Town Retail	Mix	0
Lesiure & Cultural & Out-of-town Retail	Mix	122,197
Car Parking	Mix	20,540
Public transport only Across Nantwich Rd	N/A	N/A
Cycle Highways	N/A	N/A



Land use

The Station provides the vital link between commercial parcels of land on the east and west of the rail corridor. Notably, this masterplan sees the land to the east of the station as the primary commercial land due to its superior regional road connectivity. On the west of the station the areas along Mill Street have been allocated as new high density residential areas. Immediately outside the western entrance the well connected land is allocated as commercial plots where the value and connectivity is greatest.

The Green Link provides pedestrian and cycle crossing points across the rail corridor. In this masterplan the Green Link sits inboard of Mill Street and the edge of the railway. This key pedestrian and cycle link into town is animated by a residential frontages that will give this high density area an unique character that currently does not exist within Crewe.

The football stadium is relocated to the east along with out of town retail, Gresty Road and Mill Street can be widened to accommodate greater traffic demand whilst introducing a larger buffer to residential areas. Without the Southern Link Bridge in place there is no physical barrier to the continuation of land use to the south, eliminating light industrial uses within the boundary. Boarding the red-line to the south are number of regional attractors such as the football stadium and an arena or event space. This location builds on the regional connectivity of the rail, whilst it is located within reach of the A500.

Costing

The table below details the high level costing exercise that has been undertaken for the key local authority led infrastructure. In this instance the station design is akin to Masterplan 01 as it fails to deliver the mezzanine level courtyards as detailed in Masterplan 02, the Green Link is compact, the Southern Link Bridge not in place, whilst the football stadium is relocated.

Figure 5.19 - Costing table - Mott Macdonald

Component	Masterplan 03	Car parks	
Direct construction works			
Station Buildings and associated works	73,946,350		
Work to Existing Buildings	4,816,000		
Gresty Road Stadium relocation	39,702,500		
External works	3,086,350		
Southern Link Bridge	-		
Green loop, the cycle loop and the residents / business permit parking zones	14,012,342	57,500,000	
Miscellaneous	2,307,250		
Site Clearance and Preparation Works	466,837		
Total	138,337,630		
Indirect construction costs			
Preliminaries	41,501,289	17,250,000	*Allowed 30% of Direct Construction cost
Overheads and profit	17,983,891	9,717,500	*Allowed 13% of Direct Construction cost
Project / Design Team Fees and Other Project Development Costs			
Design Fees	16,600,515	6,900,000	*Allowed 12% of Direct Construction cost
Client Management Costs	16,600,515	6,900,000	*Allowed 12% of Direct Construction cost
Environmental Mitigation	5,146,159	2,183,850	
Possession/Isolation	5,533,505	0	*Allowed 15% of Direct Construction cost
Schedule 4	20,750,644	0	*Allowed 15% of Direct Construction cost
Total	262,454,152		
Other costs			
Land purchase /rental	Excluded		
Costs associated with DCO's or TWOA	Excluded		
Optimism Bias	Excluded		
Risk/Contingency	157,472,491		*Allowed 60% of total cost
Combined Total	**419,926,643**	**167,277,160**	

NOTE: High level costing information has been conducted within the scope of the 'Funding and Financing Strategy' report. The figures presented are not NR assured.

5.6
MASTERPLAN 03
GREEN LINE

As Masterplan 03 is primarily focused on creating a regional centre to the east of Crewe Station, this masterplan explores an eastern boulevard running north to south, linking Crewe Campus with the regional attractors to the south. With the Green link taking a more direct route north of the station, the land parcels directly adjacent to the western entrance can be combined. The reclamation of a small part of Nantwich road provides a new large commercial area.

With the football stadium no longer present the land on the west of Crewe become better connected and of high value, whilst car parking can be located in close proximity to the entrance. Without the Southern Link bridge there isn't a natural barrier to the south of the station.

Figure 5.20 - Masterplan 03 building heights

Figure 5.21 - Masterplan 03 Green line planning

Figure 5.22 - Masterplan 03 building uses

6.1 - STATION CONCEPT

The work illustrated in this section identifies a conceptual approach for the station architecture. The overriding intention of the concept is that the architecture of the station could be developed in phases to align with either the way the project is funded and procured, and/or constructed in incremental stages. To that end, the design concept illustrated here commences with an approach to how a transfer bridge deck could respond architecturally to the context of the existing roof structures at Crewe, then moves onto encompass larger areas of work to the existing main roof.

In figure 6.1, a simple, enclosed box is inserted through the existing roof structure. Due to required finished floor level of the transfer deck, any deck would necessitate the removal of the adjacent roof tension bars and structural bays to accommodate entry onto the deck at both sides from platform level. In this scenario, an orthogonal closed off deck has no relationship with the platforms below and such would not be desired.

Figure 6.2, suggests that, following removal of the adjacent existing roof structural bays, it is important to connect the platform and deck levels visually and spatially such that the deck feels part of the station environment. Such a design move would also help with making passenger movement up to the deck intuitive. The light and airy environment currently exhibited at Crewe should be maintained, the enclosed nature of a deck roof form which directs the views inward to the station, rather than outward beyond the roofline, should be encouraged.

The second major part of the architectural concept has been developed around the main part of the existing roof space, which currently spans the tracks and platforms. This part of the concept also seeks to elevate Crewe's heritage assets and existing high quality buildings to put them at the forefront of the station environment.

Figure 6.1 - Existing deck condition

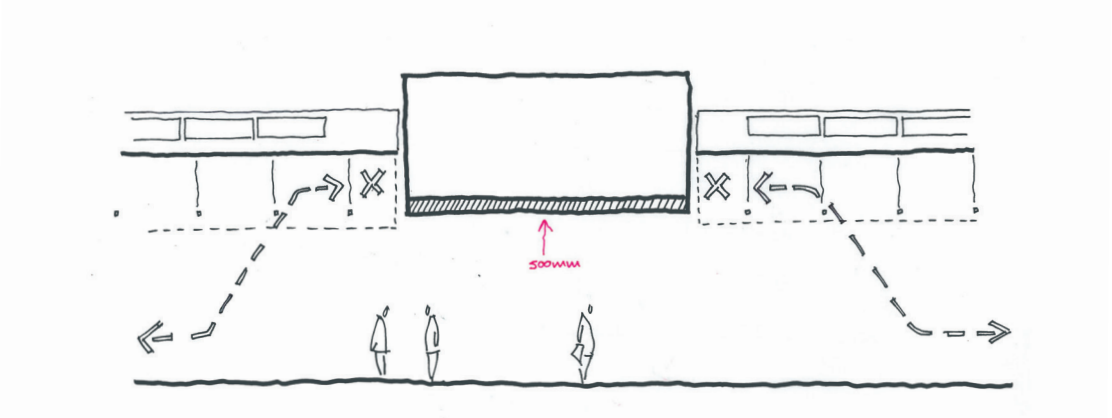
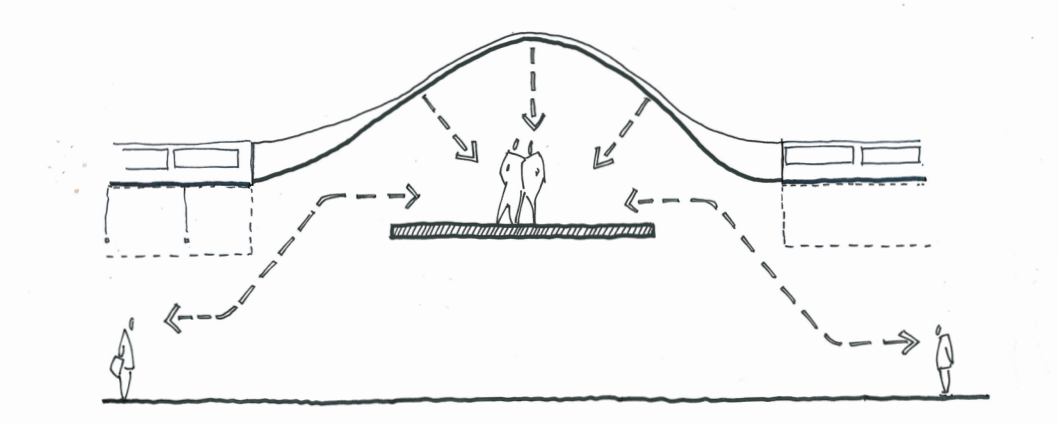


Figure 6.2 - Proposed deck condition



The central region of Crewe Station that sits between the new transfer deck to the south and Nantwich Road to the north plays a key role in establishing a station identity and atmosphere. It is this region of the station that should reinforce the 'light and airy' feel of the existing station.

The diagram below highlights how within large civic stations this has been achieved by top lighting the spaces. This is done by lifting the roof structure usually with columns above the platform level, it is common then to find opaque infill to the sides of the roof structure to provide shade and solidity with light dropping down centrally. This concept has been used to create the light and airy feel within the station courtyards as detailed in the image on the right hand page.

The courtyard spaces at Crewe are bordered on 4 sides by the new deck, Nantwich Road dispersal bridge and the heritage buildings. It is in these locations that light should be dropped down creating a protected, pleasant and light filled platform condition.

At the intersection of the deck (street) and the platforms are important decision points that are integral to the stations wayfinding. It is at these intersection points the light, volume or architectural expression should change to indicate these are important spaces, this strategy should aid intuitive wayfinding.

Figure 6.3 - Liverpool Street Station

Figure 6.4 - Paddington Station

Figure 6.5 - Light and airy concept diagram

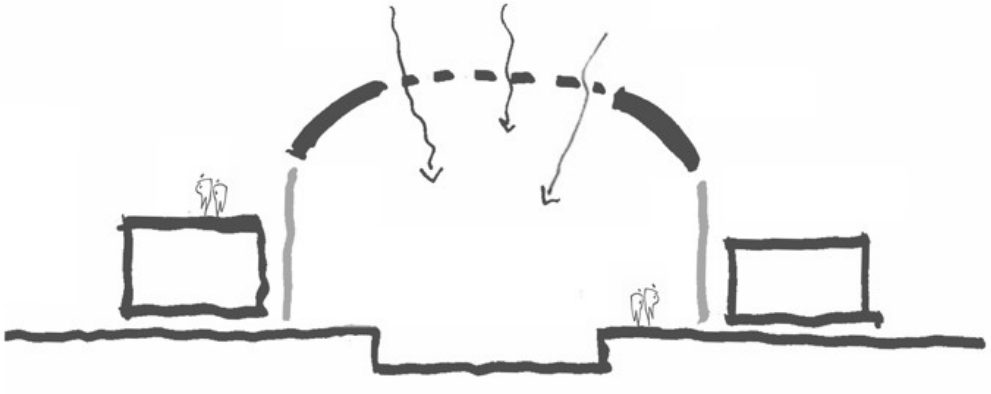
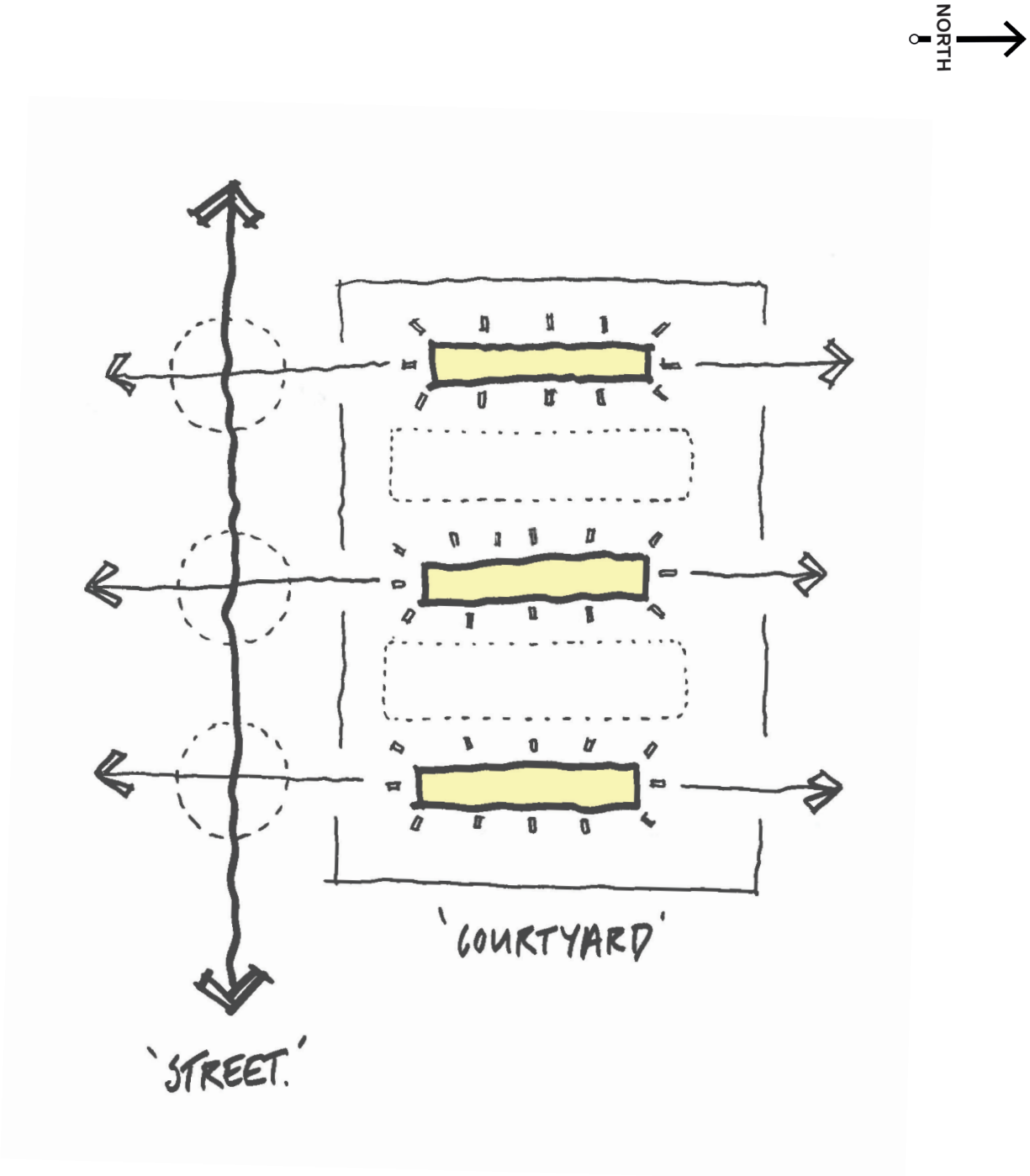


Figure 6.6 - Plan parti diagram - internal courtyards



6.2- HERITAGE CONCEPT

Crewe station has two listed buildings of significance to its railway heritage and a series of listed screen walls. These listed structures form part of what makes Crewe station what it is today and portray the importance of Crewe's history as a nationally important railway town. An intrinsic part of the architectural concept is to celebrate Crewe's railway heritage by bringing life back into the heritage buildings, making them more front and centre and giving them room to breathe. It is proposed that the existing 1905 Building on platforms 12/13 is demolished, or at the very least remodelled.

The highest quality part of the listed buildings on platforms 1-5 and 6-11 is the brickwork facades at low level (platform level). The upper storey of the buildings are composed of low quality red brick construction, which when originally constructed along with the existing 1867 roof, was never meant to be visible from platform level as the roof line is in between the two storeys. The diagrams show that our proposal for these listed buildings is to remove the low quality upper red brick floors of the buildings. The design proposal which follows on the subsequent pages explains how the concept is to provide new mezzanine floors above the heritage ground floor levels, to make the upper level of the station much more accessible from the surrounding grade level.

Figure 6.7 - Station Heritage

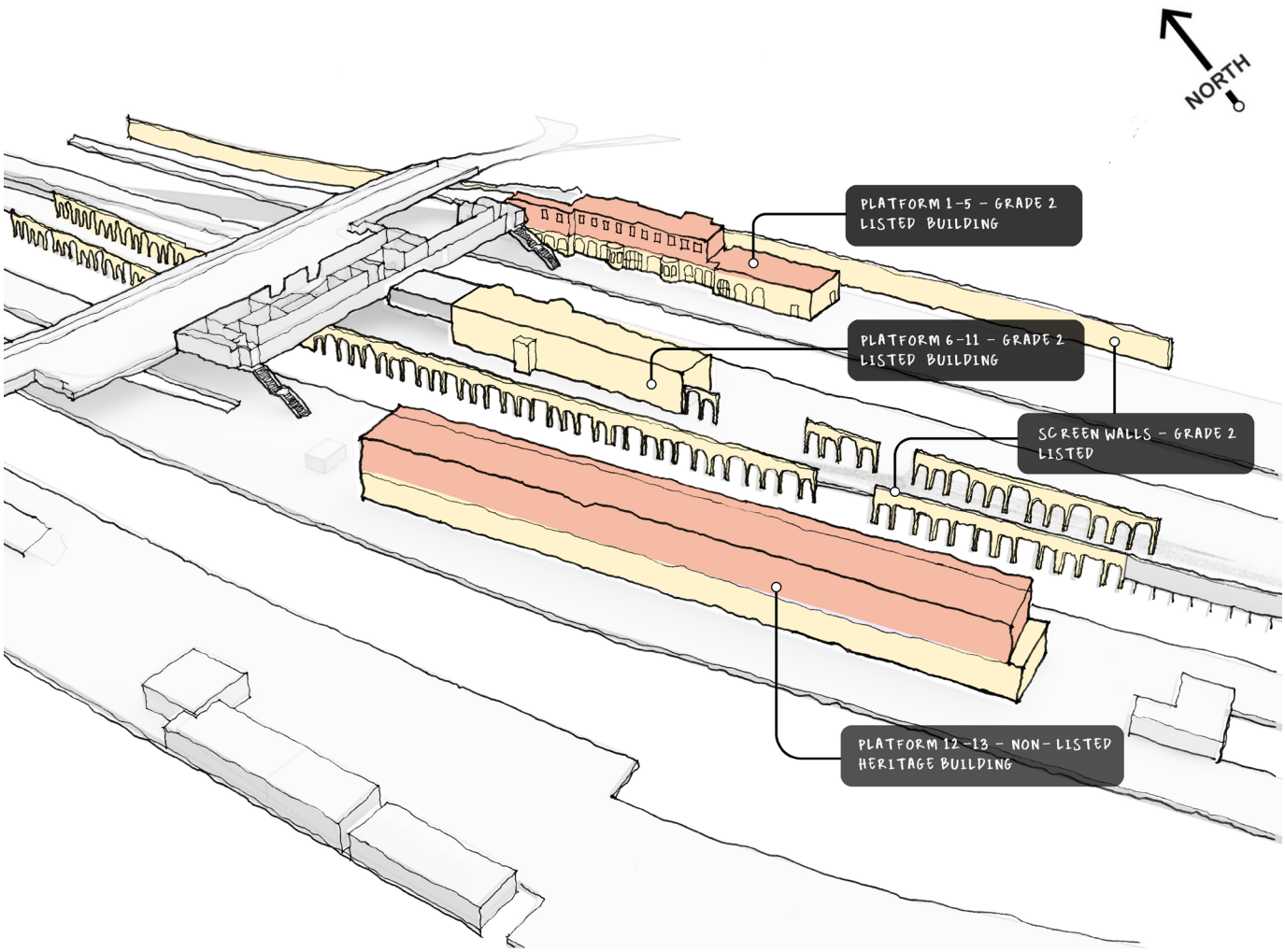


Figure 6.8 - Platform 1-5 Heritage building - Canopy and building relationship

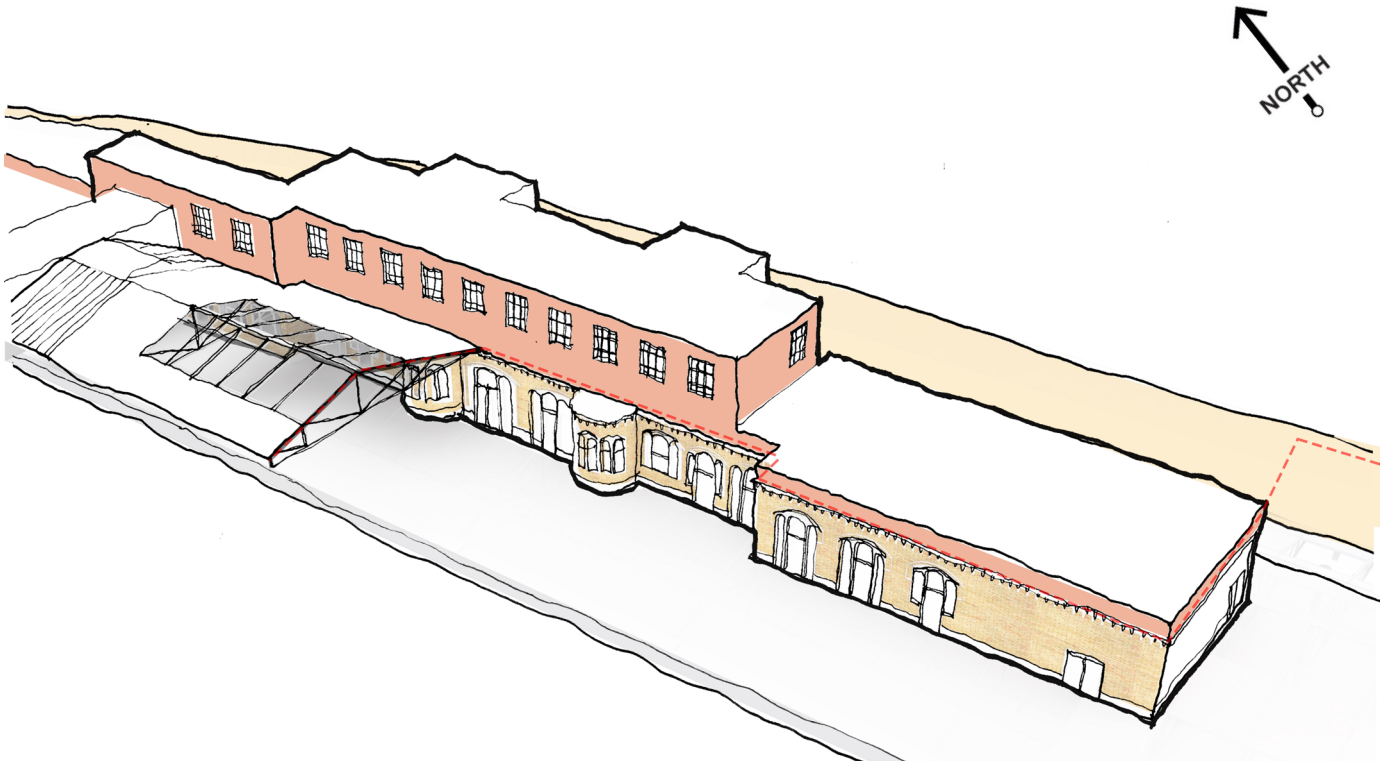
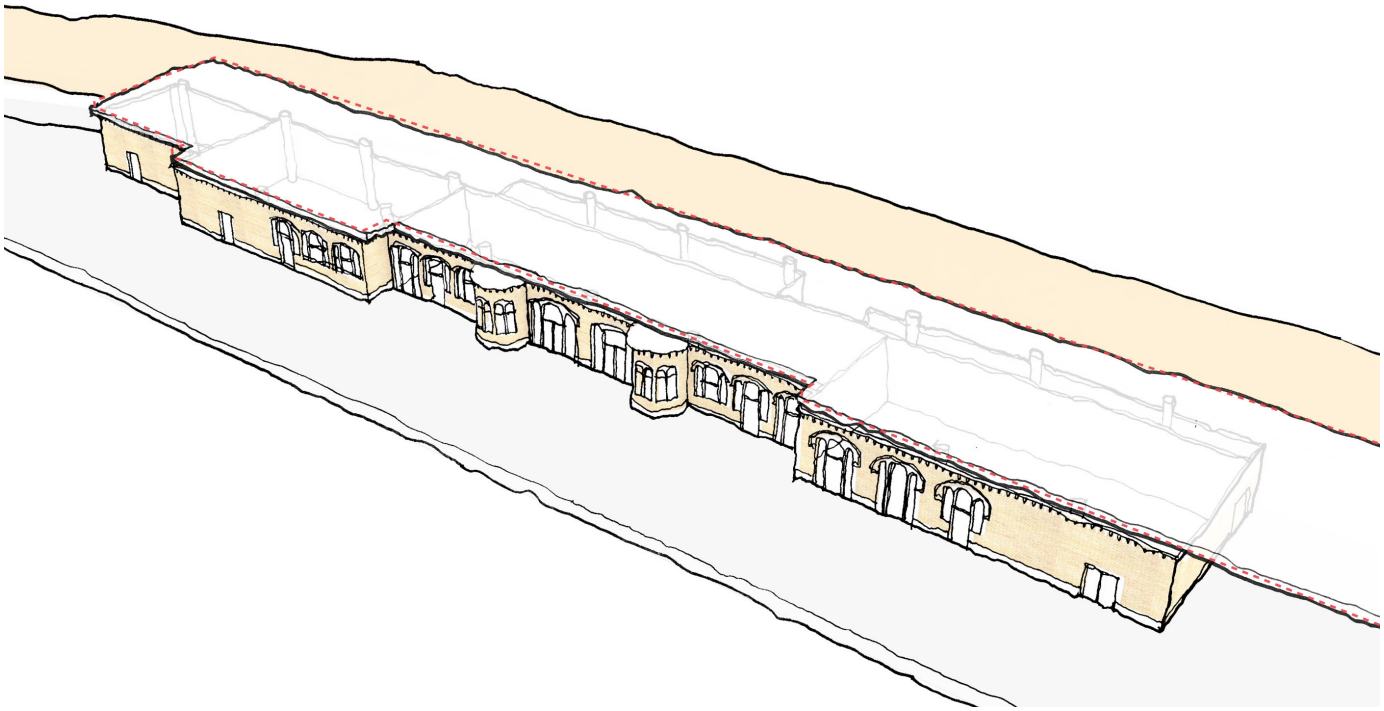


Figure 6.9 - - Platform 1-5 Heritage building - New heritage mezzanine deck



6.3- STATION VISION

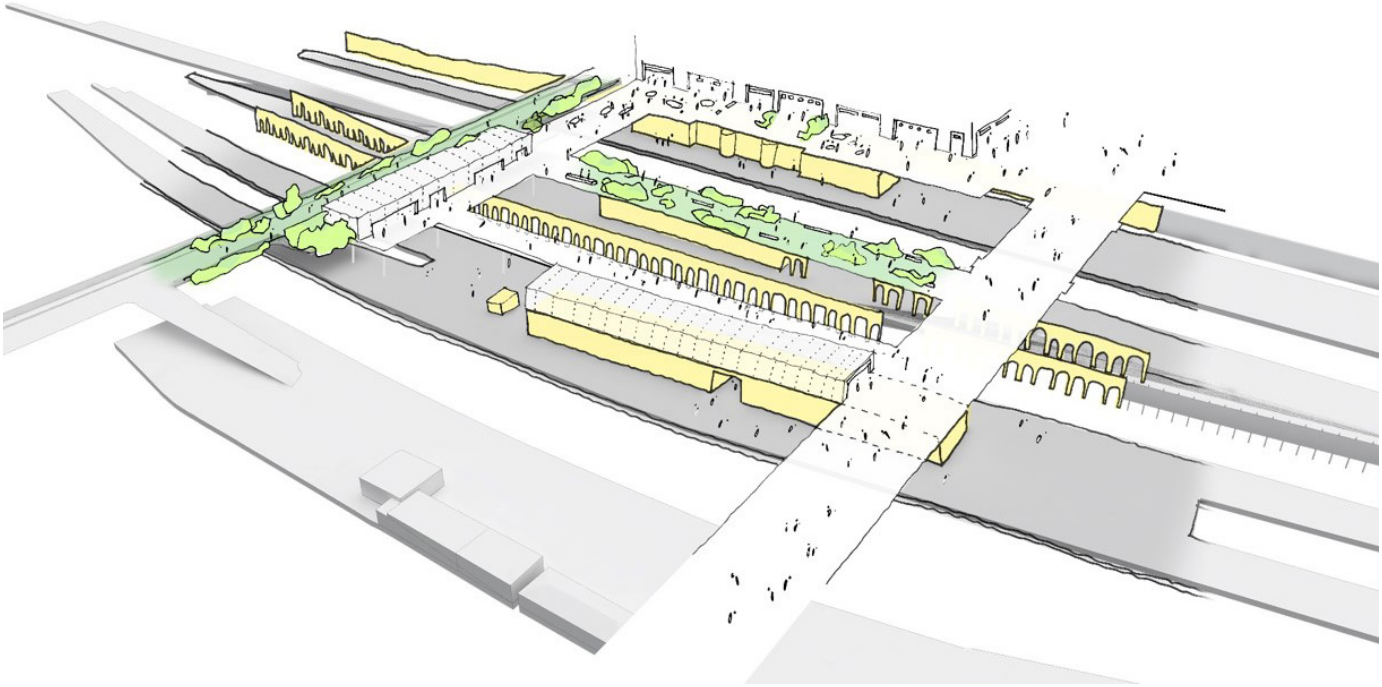
As described on the preceding heritage concept pages, the upper level of the existing heritage buildings is proposed to be utilised to allow access from the surrounding grade level. Crewe station is essentially in a low level cutting, with the platforms and high quality heritage buildings occupying the lowest level of the site. Grade level is around 5.5m higher than platform level and therefore currently the station itself sits in a 'basin' accessed by stairs and escalators from the surrounding higher grade level.

It is the intention of the station concept to bring the grade level much more into functional use as part of the station, to allow access points from the surrounding roads onto a newly created mezzanine level above the heritage buildings. This new datum would be at the same level as the new transfer bridge deck and would form a continuous level around the site.

The existing Nantwich Road Bridge entrance is closed in its current guise as the primary entrance and a new primary entrance will be located on the existing Weston Road car park site. In the proposal, Nantwich Road Bridge is retained as a tertiary entrance, perhaps exclusively for pedestrians and cyclists. The new higher level datum connects the station to the surrounding grade level at multiple points and provides a permeable station campus site with can is fully accessible on three sides. The new mezzanine level floors which are inserted above the heritage buildings connect the deck and entrances and provide amenity space for the station and potential spaces for retail and commercial activity.

The floor plans illustrated on these pages show how the future Crewe station could connect into the surrounding streets and access points to provide a station environment which is much more accessible to, and integrated with the surrounding town. A plan of this nature opens up opportunities for adjacent developments, for example the new building at the north east corner of the site could become a hotel and conference centre, with retail and restaurant or leisure facilities also easily accessed from the station.

Figure 6.10 - Station mezzanine level



1 - Remodelled Nantwich Road Entrance
Mezz Level - Cycle hire / cycle store / cafe / workshop

2 - Remodelled 1905 building
Platform Level - **1905 building.** Driver signing on point / waiting / WC / Station accomodation / station critical rooms
Mezz Level - Business incubator / meeting rooms / hotdesk space

3 - Central platform
Platform Level - Heritage building 6-11 - Waiting / WC / retail
Mezz Level - Station garden

4 - Remodelled 1905 building
Platform Level - Heritage building 1-5 - Waiting / WC / retail
Mezz Level - Station accomodation, retail, hotel, conference, cafe

5 - **Mezz Level -** Station street, east / west deck - potential retail

Figure 6.11 - Station mezzanine mezzanine plan

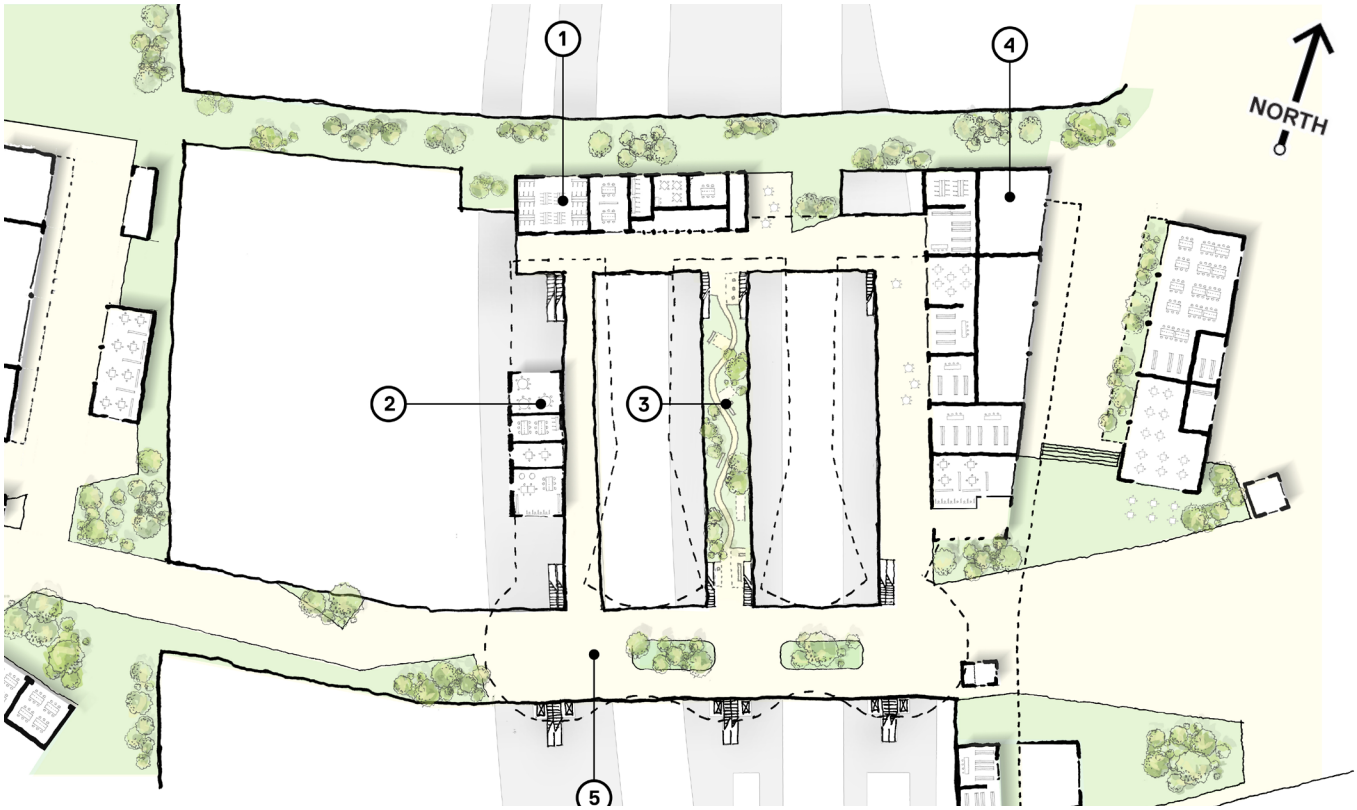
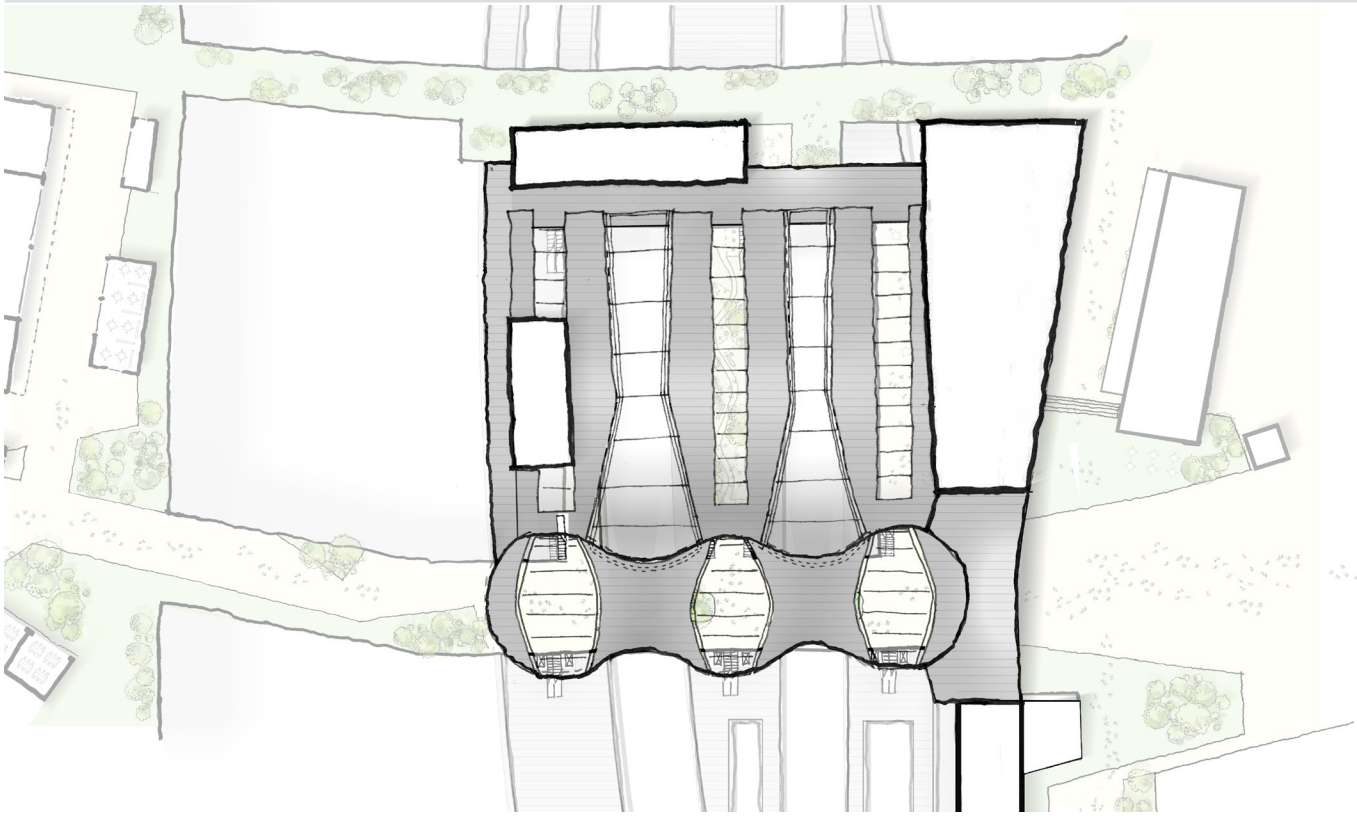


Figure 6.12 - Station roof plan



The new mezzanines above the platform sit at the same level as the land to the east and west of the station. For these spaces to be successful they need to be permeable and there must be a reason to inhabit them for either station and/or public purposes. The series of images to the right highlight potential uses for each of the mezzanine decks and their associated buildings.

1. **The Green link** - This should be a consistently high quality amenity space for the public, pedestrians and cyclists. At multiple points along the entire green link route it should widen to accommodate larger green areas for playgrounds, parks and outdoor gyms (Figure 6.14). The green link interfaces with the station at Nantwich Road (1).
2. **Former Nantwich Road entrance** - The remodelled Nantwich Road entrance can be re-purposed as a cycling facility due to its connection to the Green Link. Such a facility can house local businesses aimed at cycle repair, workshops, cycle storage, a cafe or cycle related retail units. Such functions would served Crewe and the wider sustainability agenda and also animate the station by locating it at the centre of this cycle network.
3. **1905 Building -** Located in a remodelled 1905 Building, this space could be an excellent location for a business incubator with an unique address. From a station perspective it should be possible for those who are interchanging the opportunity to hot-desk or rent office space here.
4. **Garden Link -** As with all public spaces Crewe Station should have a green space that offers the opportunity for the public and station users to simply sit and find respite and reflection. This should be a high quality green space that should be informed by the virtues of the Cheshire Landscape. The space can hold informal events or kiosks whilst relocating the station war memorial potentially would make this a place of civic significance.
5. **Eastern station building -** At mezzanine level this building can support station related and public functions in terms of retail and station accommodation. Above this level the building could be a hotel that is extremely well located that houses conference and meeting room facilities with a view.

Figure 6.13 - Mezzanine key

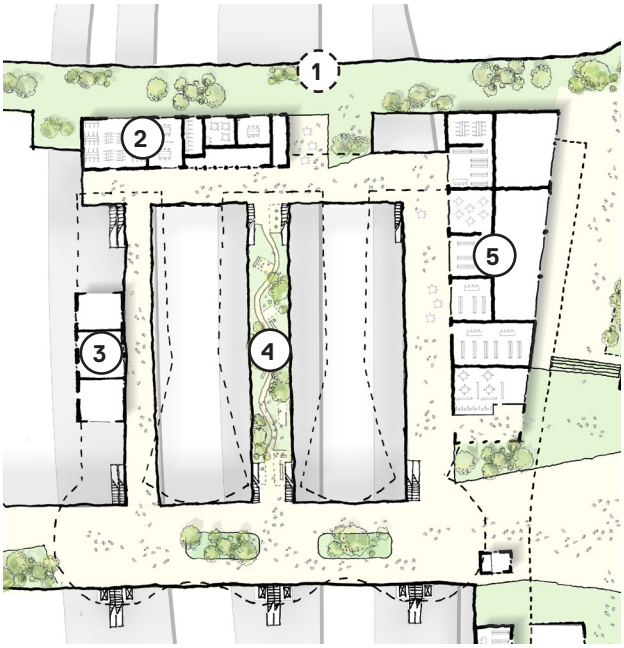


Figure 6.14 - Green Link precedent

Figure 6.15 - Workshop precedent

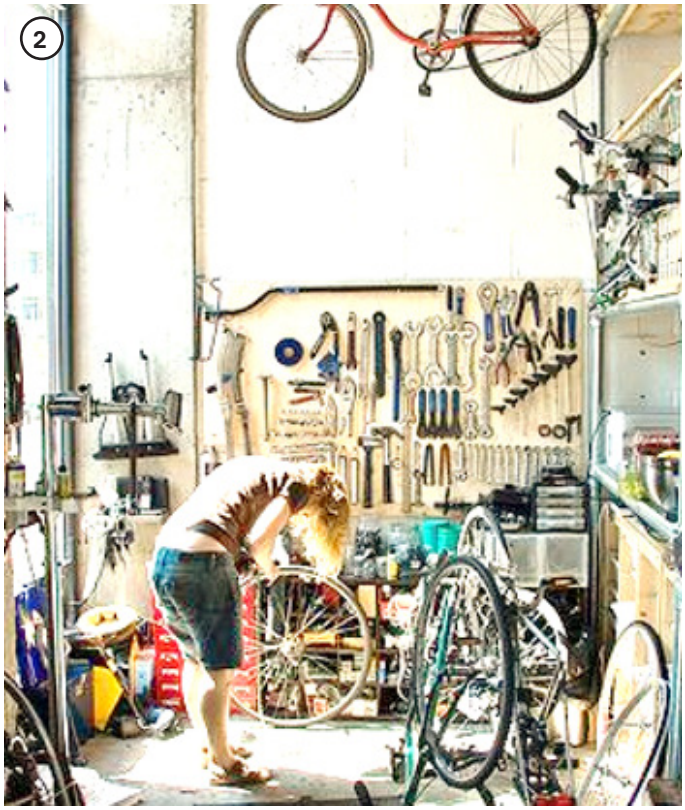


Figure 6.16 - Hot-desk precedent

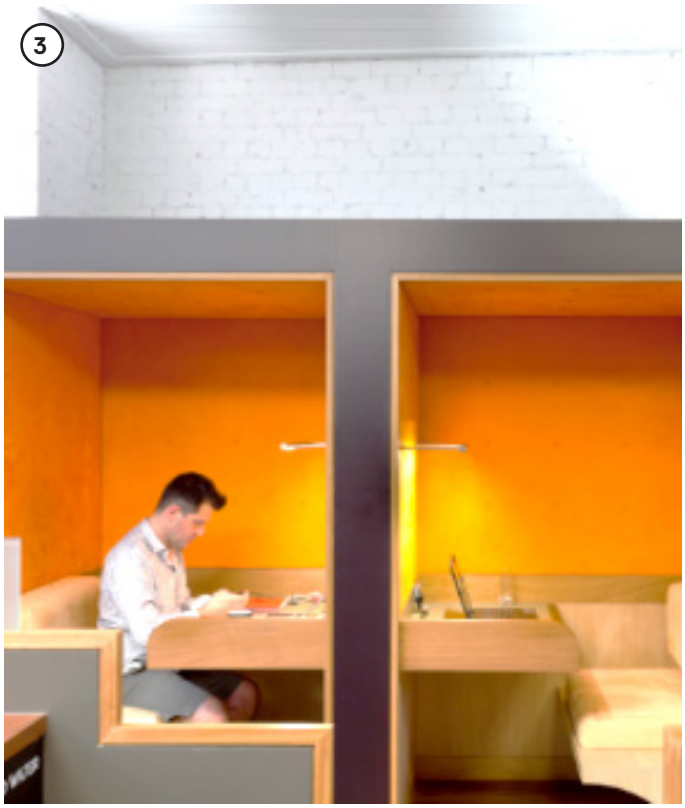
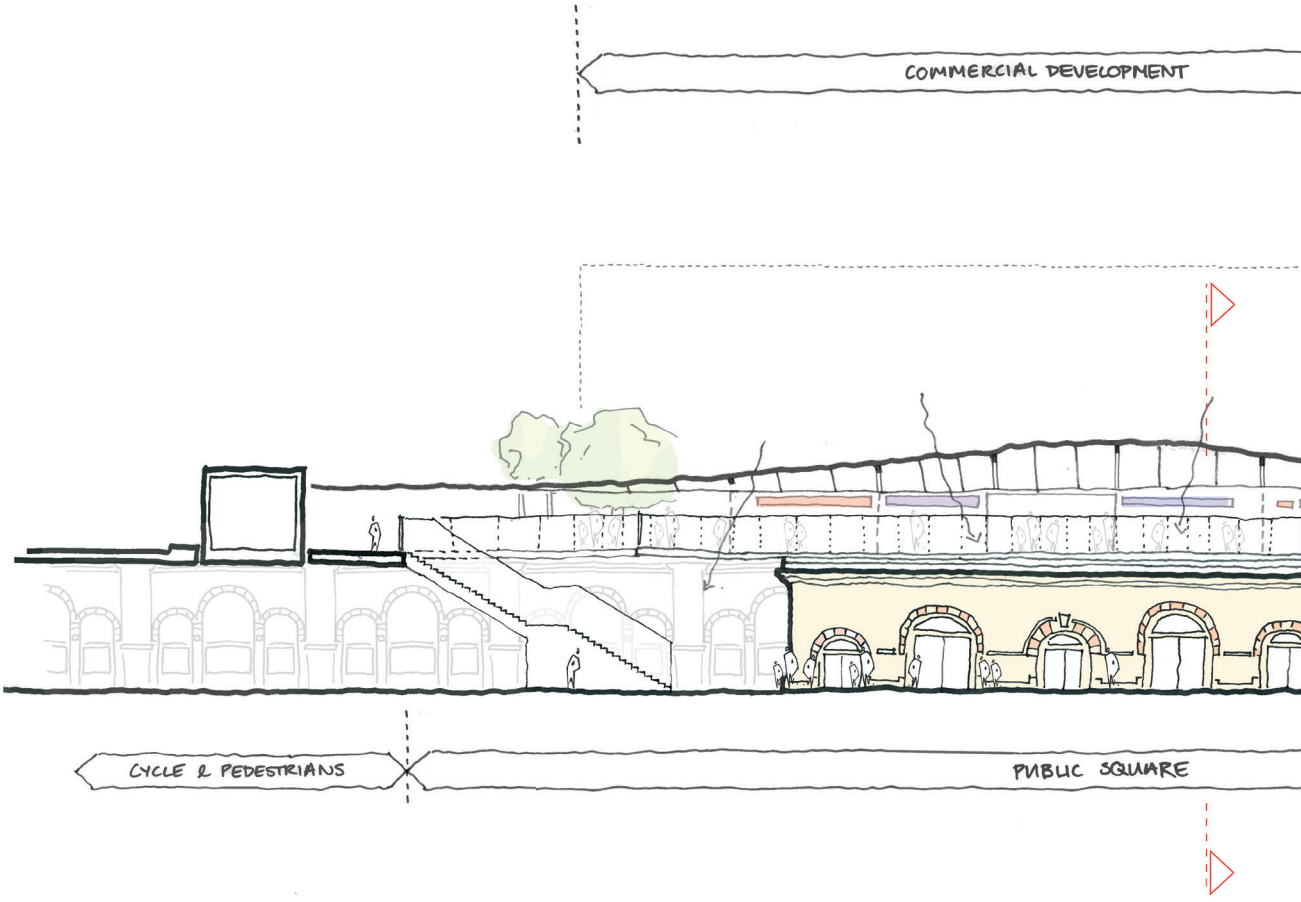


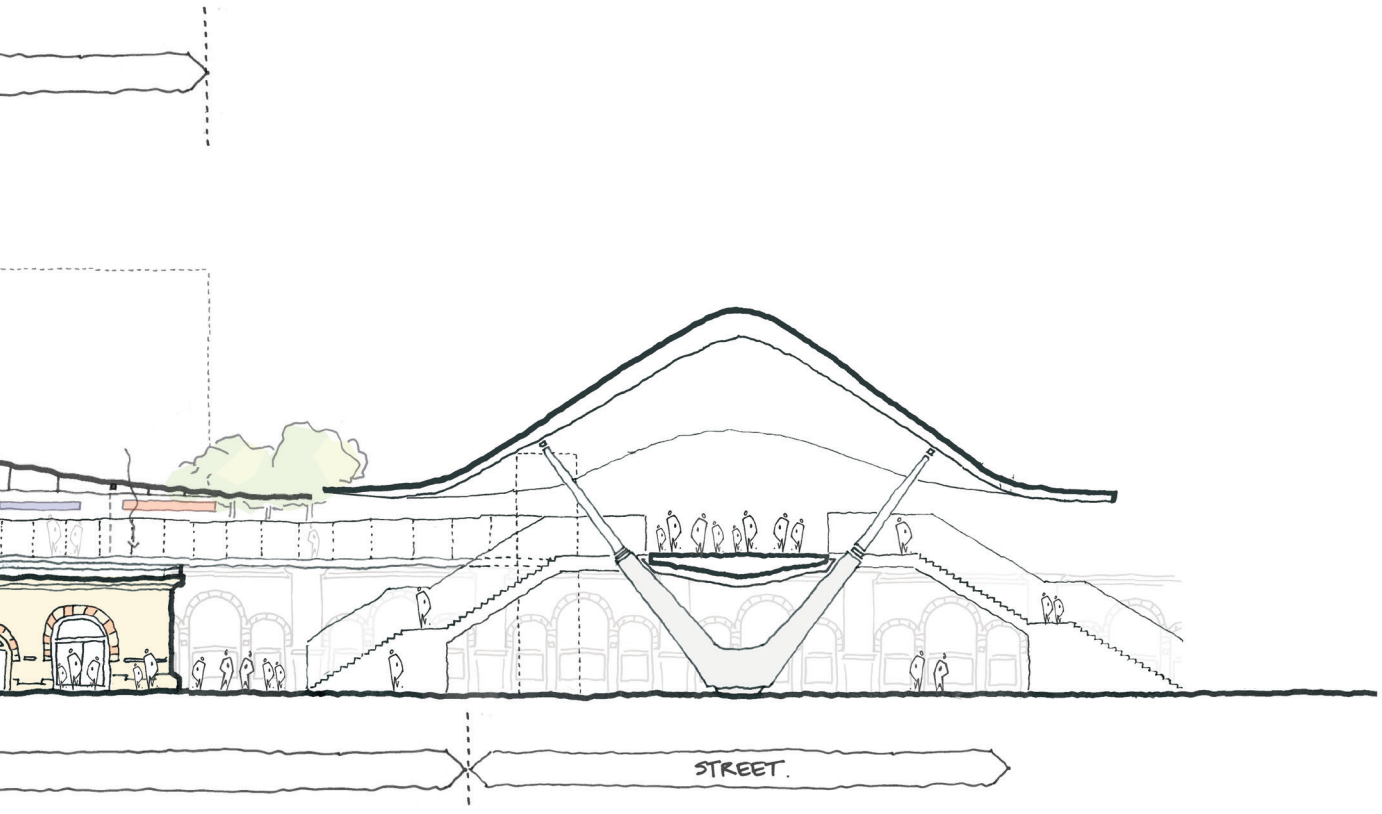
Figure 6.17 - Garden link precedent

Figure 6.18 - Hotel and conference precedent

The north / south section through the West Coast Mainline highlights the east / west deck that forms the 'Street' and the courtyard environments created around the heritage buildings. The mezzanine level that is consistent with deck level provides a new publicly inhabited region that serves as an extension of the Crewe Campus masterplan, rather than a station with hard edges.

Figure 6.19 - North / south station section

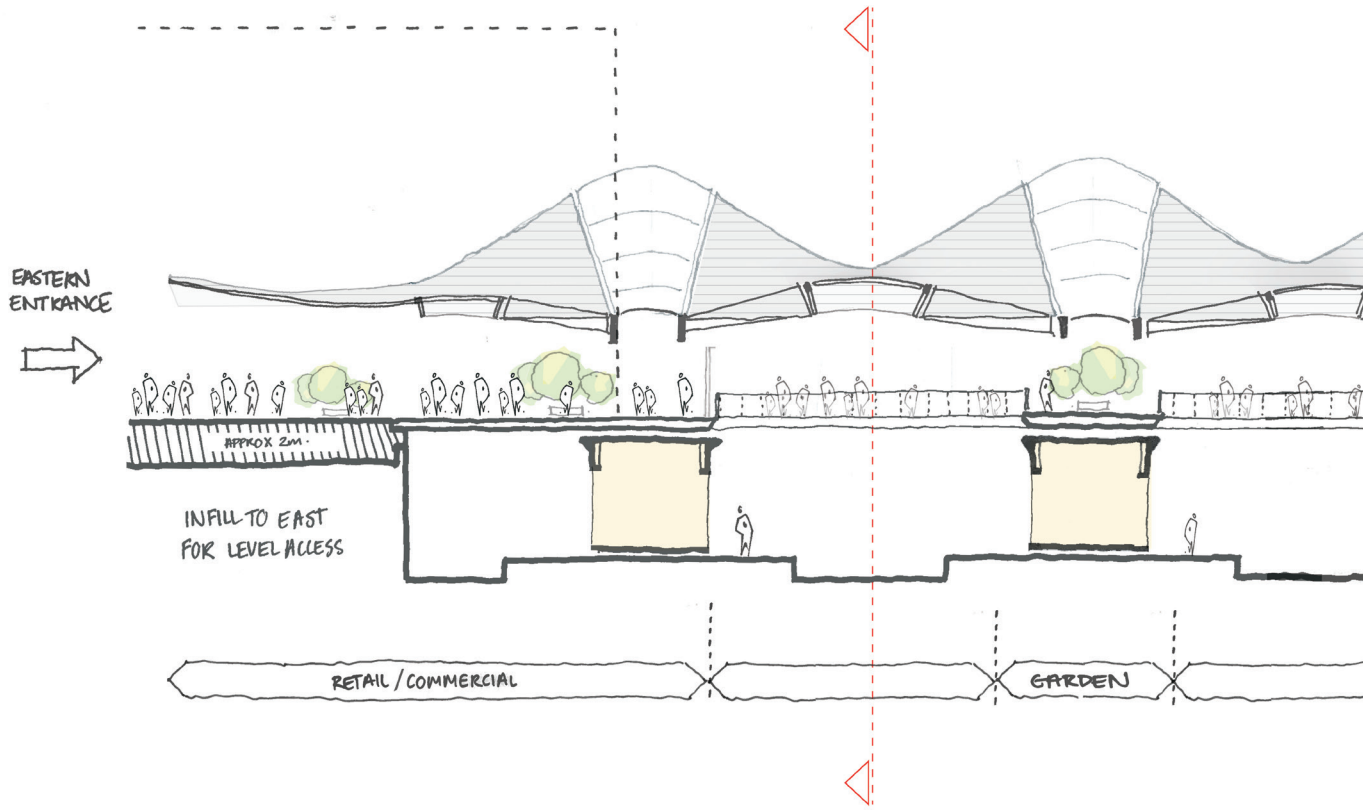


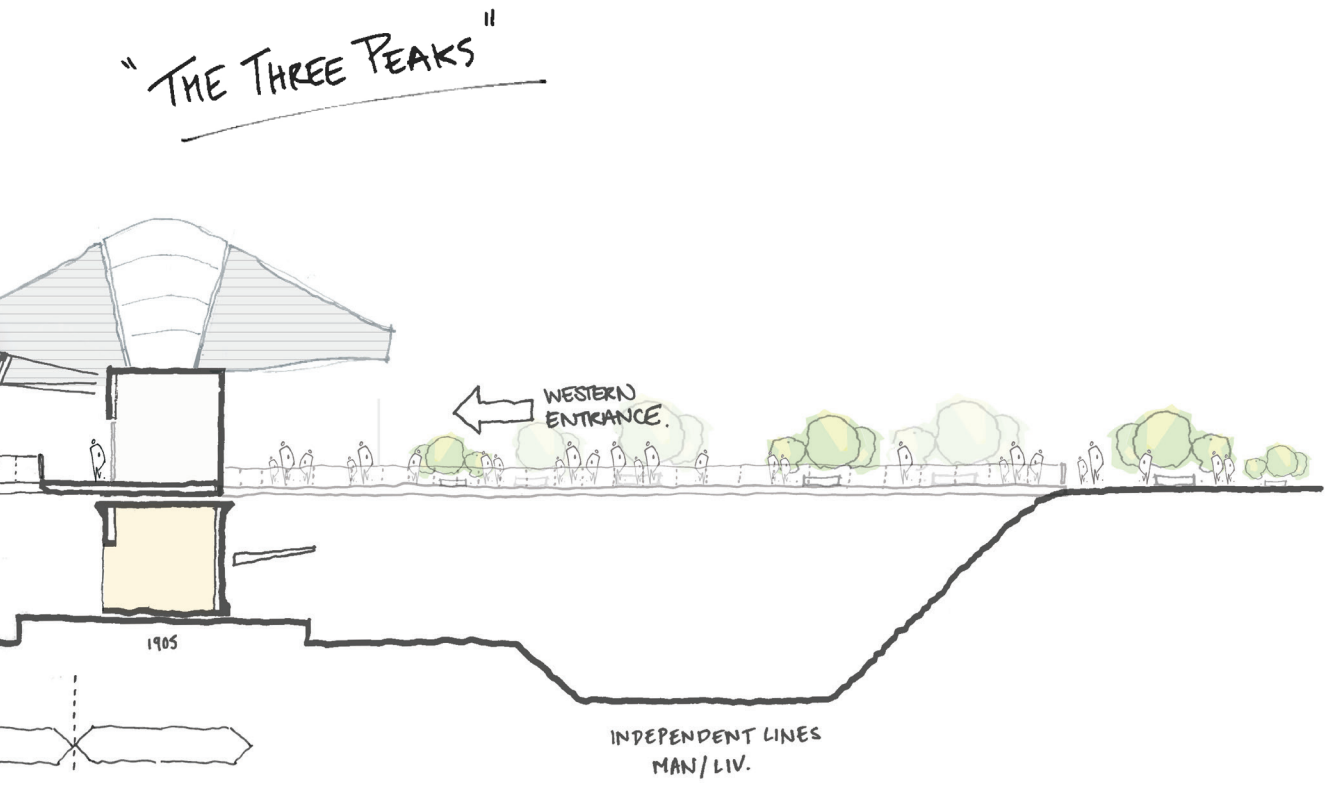

STREET.

The east / west section of the station reveals how the station deck creates east / west permeability without level changes being required. Currently it is assumed that in order to achieve level access a level of infill is required at the Weston Road (eastern entrance), this has been estimated in the region of 2m, however, verification is required once survey information is available. The western entrance lands on the existing embankment at Gresty Road.

This section also reveals how the peaks indicate decision points, intersections between deck and platform. Designed to be visible from within the station the peaks provide an intuitive wayfinding device for ease of pedestrian movement. The light filled spaces between the heritage buildings provide an enclosed courtyard feel between the new deck and Nantwich Road.

Figure 6.20 - East / west station section



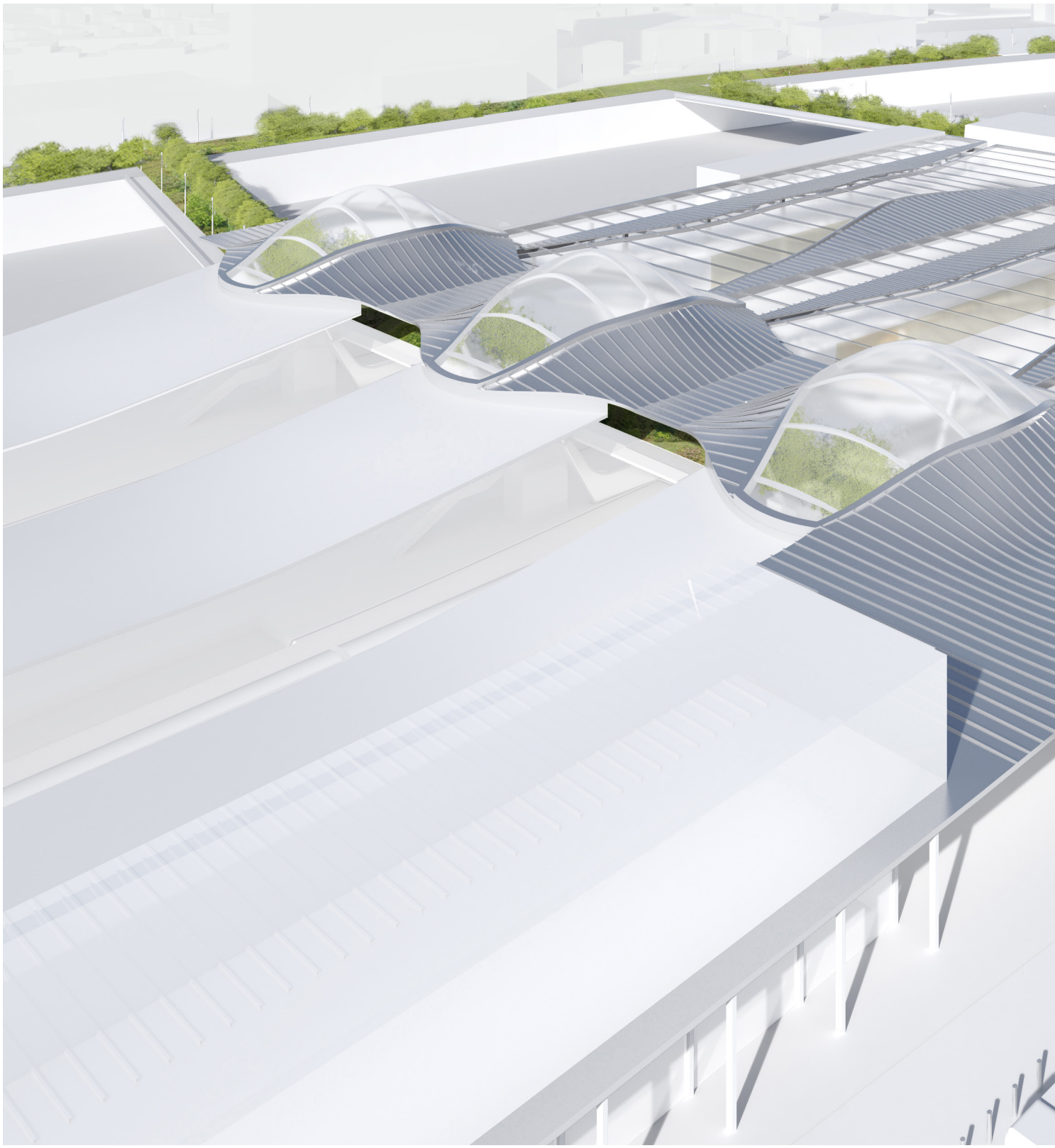

"THE THREE PEAKS"
WESTERN ENTRANCE.
1905
INDEPENDENT LINES
MAN/LIV.

Central courtyard view, an artists impression - This view is indicative of the potential platform experience at Crewe Station. This central region is light filled, protected from the elements and makes the heritage buildings at Crewe core to the design. The introduction of mezzanine levels allows the station environment to be publicly inhabited above platform level. The peaks can be seen in the distance allowing for an intuitive reading of the space as a major circulation route. This is a station and a setting befitting of Crewe's gateway role as an hub within the HS2 network and Northern Powerhouse schemes.

Figure 6.21 - Internal station environment

Roofscape and forecourt, an artists impression - This station view highlights the elemental composition of the design at Crewe with the peaks and deck structure defined separately to the central courtyard region. The integration of the 'Cheshire Landscape' has been considered to run through and around the station forming the spine of the Green Link as its heads into the town centre . Nantwich Road is repurposed as part of the green link providing a change in movement priority immediately around the station from the private car to more sustainable forms of travel. Please note that the western entrance has not been articulated at this stage and is to be developed during the option selection report.

Figure 6.22 - Station roofscape and forecourt



6.4- STATION DELIVERY CONCEPT

The architectural vision for an enhanced Crewe station is conceived to be ambitious and transformational, setting the agenda for positive change at the station and its immediate surroundings.

Whilst setting the goal of a visionary enhanced station design, we have also given consideration to how such a vision may be delivered in reality, potentially as a phased solution. To this end, the design proposal has been organised in a series of key moves, each of which could effectively be delivered separately from each other.

At this early stage of design, it is important to note that by 'phased approach' we have not yet undertaken any detailed studies on how the actual construction of a future Crewe station may divided into specific construction stages to meet a contract programme. As the project progresses, a great deal of work will be required to ensure that any design proposal is constructible in appropriately sized construction stages, taking on board all of the operational and infrastructural constraints which will exist at each particular stage.

We have, however undertaken two key approaches to set the precedent for future design development of the design are presenting at this early stage.

The first is to organise the design into large separate elements, each of which could be funded and/or delivered/constructed as separate 'projects', namely that of (in order)

1. The new east/west spanning transfer bridge deck and associated entrance

2. New central zone 'courtyard' mezzanine floors and roof to the area in between the two transfer structures (spanning the heritage buildings)

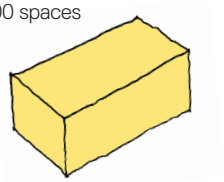
3. Platform canopies outside of the bridge deck and central zone (to the north of Nantwich Road Bridge and to the south of the new bridge deck

4. Finishing touches added to the public realm and inter-modal facilities

The second approach we have taken with the preliminary design is to ensure that the forms and structures which make up the design we are showing are able to be constructed from modular components. The design team have a high level of experience in delivering modular solutions for rail environments and the approach we have taken with the design of the forms and structures shown here is that they could be constructed in prefabricated, sectional and modular systems to provide a design that has multiple repeating elements across the project. Further work will need to be done in the subsequent design stages to develop detailed strategies for achieving this, but at this early stage there is nothing within the design we have shown which should preclude the use of repeating modular components.

Figure 6.23 - Stage 1

Car parking
+ 2000 spaces



Station - Stage 1

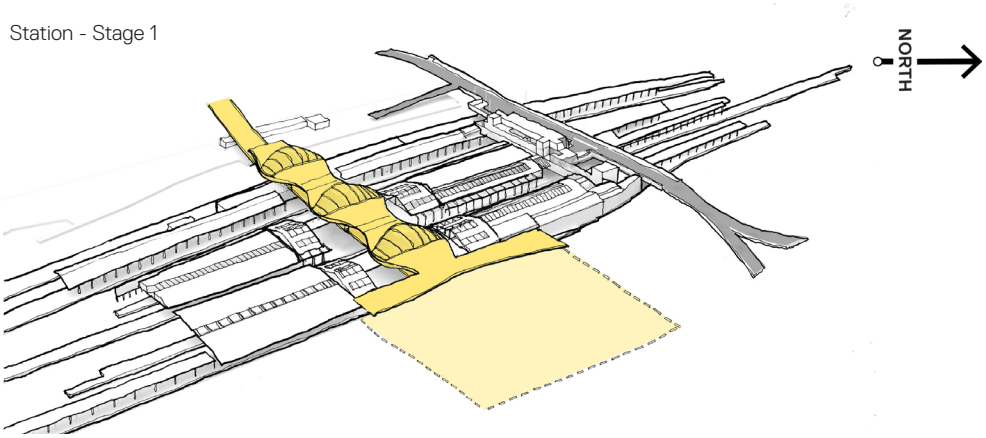
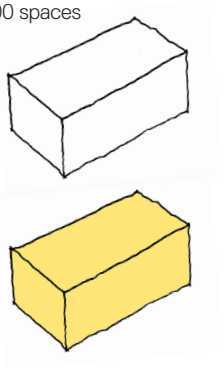


Figure 6.24 - Stage 2

Car parking
+ 2000 spaces



Station - Stage 2

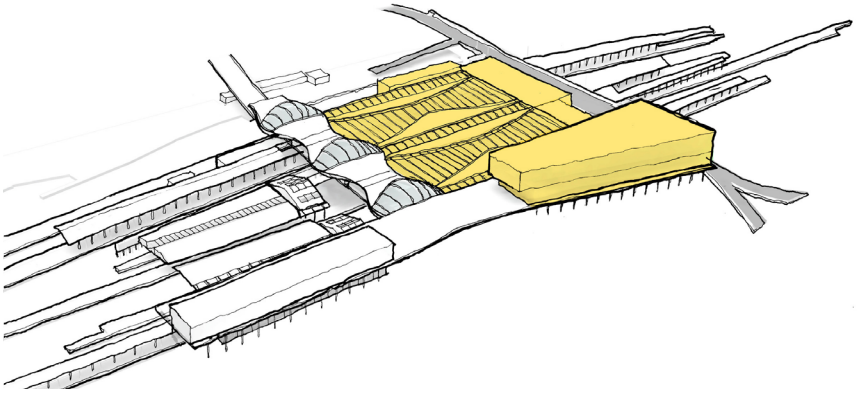
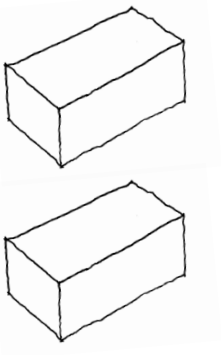


Figure 6.25 - Stage 3

Car parking



Station - Stage 3

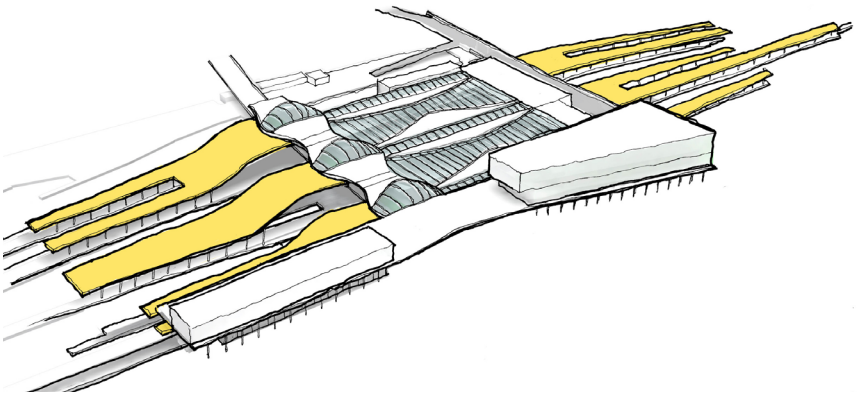
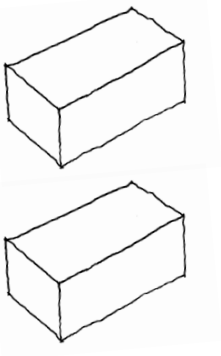
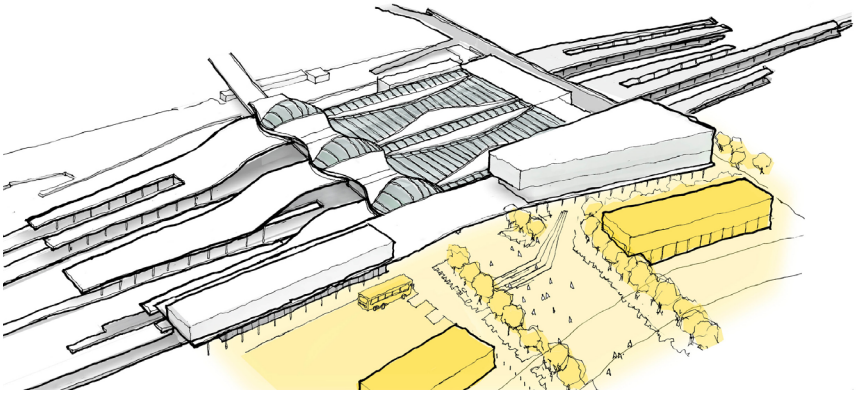


Figure 6.26- Stage 4

Car parking



Station - Stage 4



WHAT'S NEXT?

The three red line boundary masterplans shown here are to be taken into the next stage of feasibility (options stage) of the project. During this stage of work, greater refinement of the plans, incorporation and development of the transport strategy and input from the Finance and Funding Strategy and the Business Case and Revenues workstreams will occur. The analysis of each masterplan is to be undertaken to understand which elements within the masterplans are delivering the desired outcomes. It is unlikely that the preferred option generated at this stage will be one of the three prescribed masterplans within this report, but rather a hybrid solution that brings together the most effective elements in one coherent scheme.

Further development of the initial station concept and development immediately around the station within the green line boundaries will also take place.