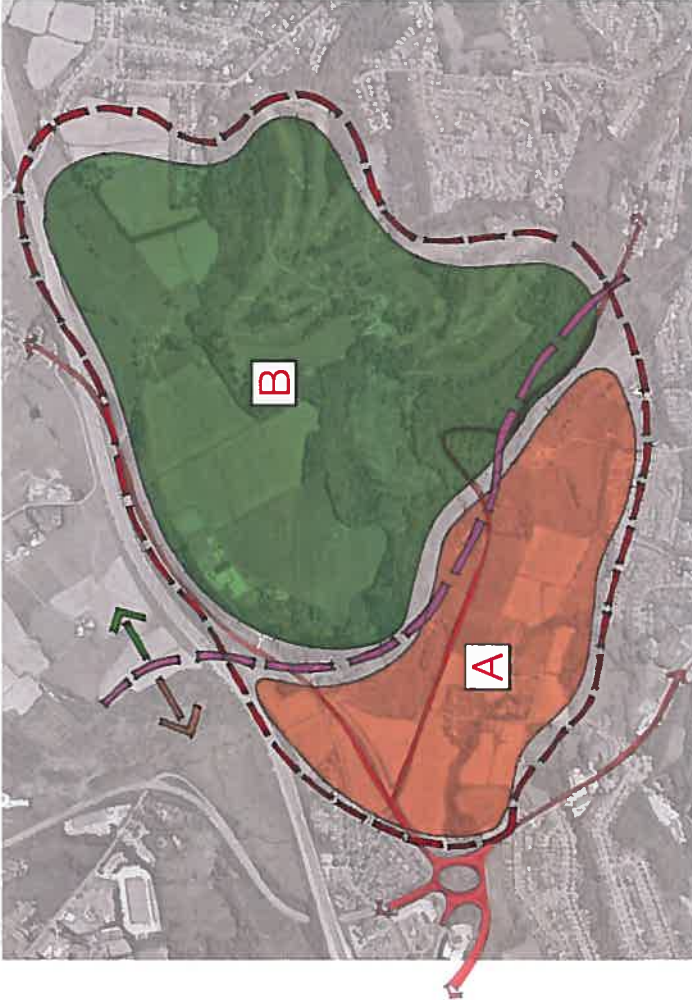


4.01 primary character areas

Landscape & urban form

The landscape character of the proposal area breaks into two distinct zones:

- A - East and South Area**
A high proportion of the area is open fields, broken by groups of historic farm buildings, and housing fronting Halifax Road, Yew Tree Road and Burn Road.
- However, the urban form of adjacent suburbs of Birchenciffe, Prince Royd and Reap Hirst and the dominant M62 approach road network impact strongly on the area, giving it an urban fringe character. This is most evident to the eastern frontages, with the western portion presenting a more complex interaction of suburban influences with the rural character of the Thornhill Estate and woodland belts.
- B - North and West Areas**
This hilltop area presents a varied but significant landscape-led character. Substantial tree belts and the topography form a buffer to the existing urban area of Huddersfield, which helps define the area as a discrete entity and separate to the adjacent character areas.



Country estate influences

The contribution of the upper hilltop area as a large landscape resource within the wider area is significant. Any future change needs to be subtle and achieved in a way that protects the landscape feel.

The Thornhill Estate has been in single ownership since the 13th Century. This historic control has allowed the Estate to evolve a distinctive character and a unique identity that contrasts with its surrounding urban and rural context.

The character stems from many elements, such as Fixby Hall and the remnants of its parkland setting; the topography; dramatic stretches of woodland and many subtle design elements associated with historic country estates.

Respecting this unique character is key to generating a unique sense of place for future development. This will ensure local characteristics are retained, and so maintain variety and richness of the Huddersfield and Kirklees environment. The urban fringe character of the valley bottom and gateway area is much more receptive to built development, as a natural extension of urban Huddersfield.





- Enclosed linear valley bottom
- Woodland spine
- Linear hillside & headland
- Hilltop plateau
- Western M62 gateway frontage
- Sloping open fields
- M62/Brighouse Road hillside & summit

Enclosed linear valley bottom

- Grain established by small-scale field patterns
- Semi-rural 'village' character
- Small watercourses with lines of trees
- Strong physical, spatial and visual relationship to sloping valley sides and summit woodland belts
- Strong visual relationship to adjacent suburban residential areas but minimal character or physical connection



Linear hillside & headland



- Semi-rural character
- Steeply sloping linear valley sides and visually dominant headland facing South-West/West
- Strong relationship to valley bottom
- Enclosed by linear woodland along valley ridge
- Hedgerow/copses to West; dense deciduous tree cover to East (ancient woodland)
- Mid-distance/long-distance views in and out of area
- Seasonal variations of colour from woodland



Western M62 gateway frontage



- Urban/suburban built form
- Lack of integrated urban form giving poor sense of place
- Poor containment to road frontages
- Dominant road/roundabout
- Dominant electricity pylons and cables
- 2/3/4 storey buildings
- Varied built character of terraces/pavilion buildings
- Good mid-distance views to linear hillside and headland



M62/Brighouse Road hillside & summit



- Exposed open character
- Long views from area
- High visibility into area from M62 and long distance views
- Adjacent to suburban housing
- Noisy





Woodland spine

- Mature deciduous woodland
- Substantial linear tree belt forming unbroken line along summit from Southern views
- Seasonal variations of colour and foliage
- Intimate pedestrian paths within woodland
- Remnants of historic Estate entry road



Hilltop plateau

- Open landscape bowl enclosed by hillsides and tree belts
- Hidden asset discovered on entering area
- Historic remnants of Fixby Hall landscape grounds, eg ha-ha, rhododendrons, tree stands, courtyard spaces
- Views to Fixby Hall set low within the landscape bowl
- Overall character of managed parkland with open grassland associated with golf course
- Long views across Huddersfield to East



Sloping open fields

- Large field pattern
- Dominant electricity pylons and cables
- Enclosure to South from woodland spine
- Open views to North
- Exposed



The dramatic landform has an enclosed bowl which houses Fixby Hall at the summit of steep escarpment slopes on three sides. To the south the escarpment slope is the side of a linear east-west sloping valley on the line of Grimescar Road.

The topography is a key characteristic of the landscape, allowing mid and long distance views out of the site, and is the focus for views into the site. Care is needed to respect the landscape character of these slopes by integrating built development within pockets of planting – to avoid it being visually intrusive.



View from the approach from M62 looking south-east

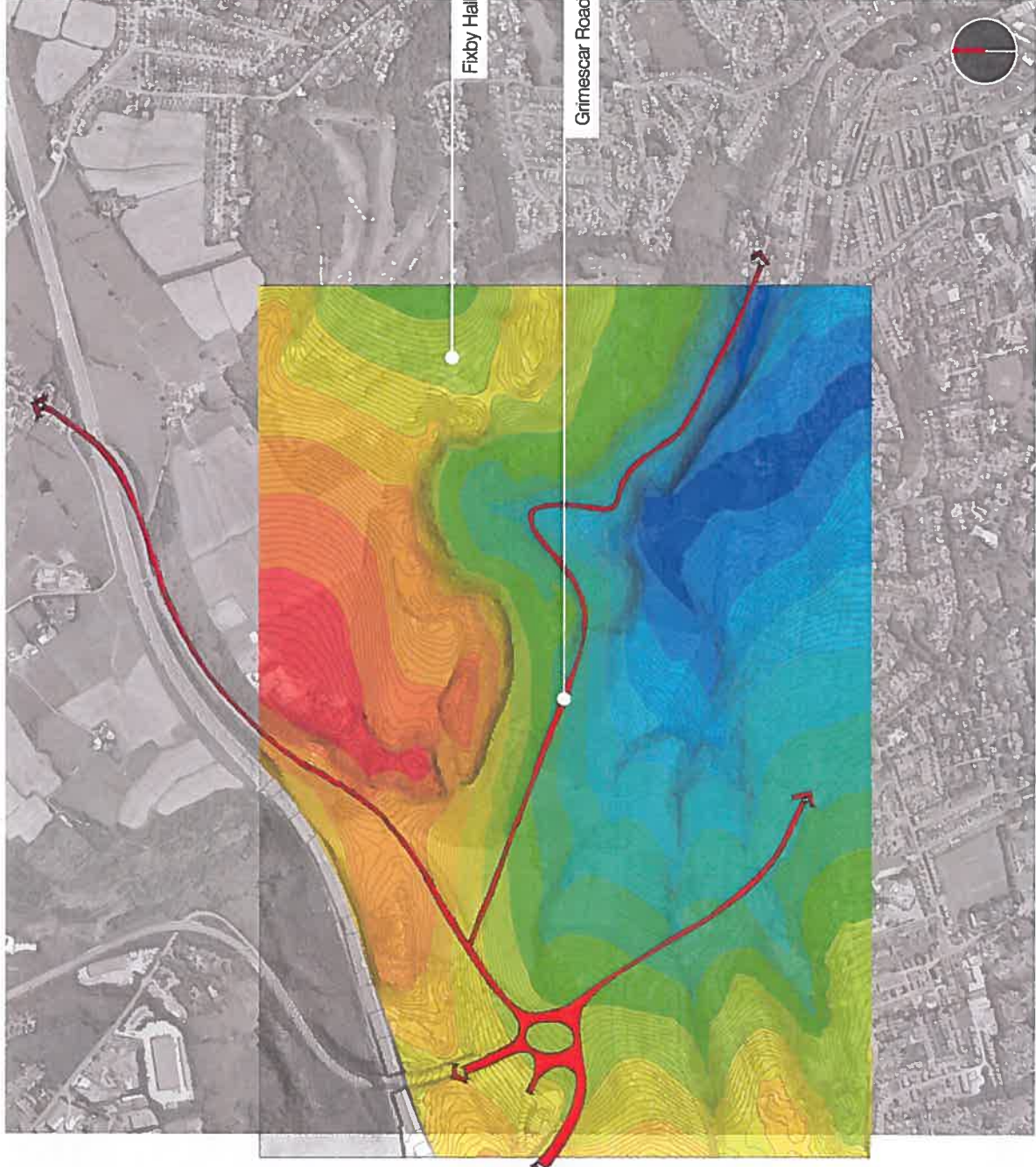
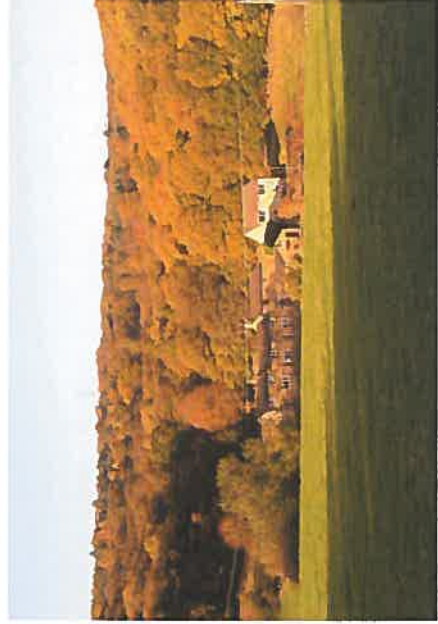
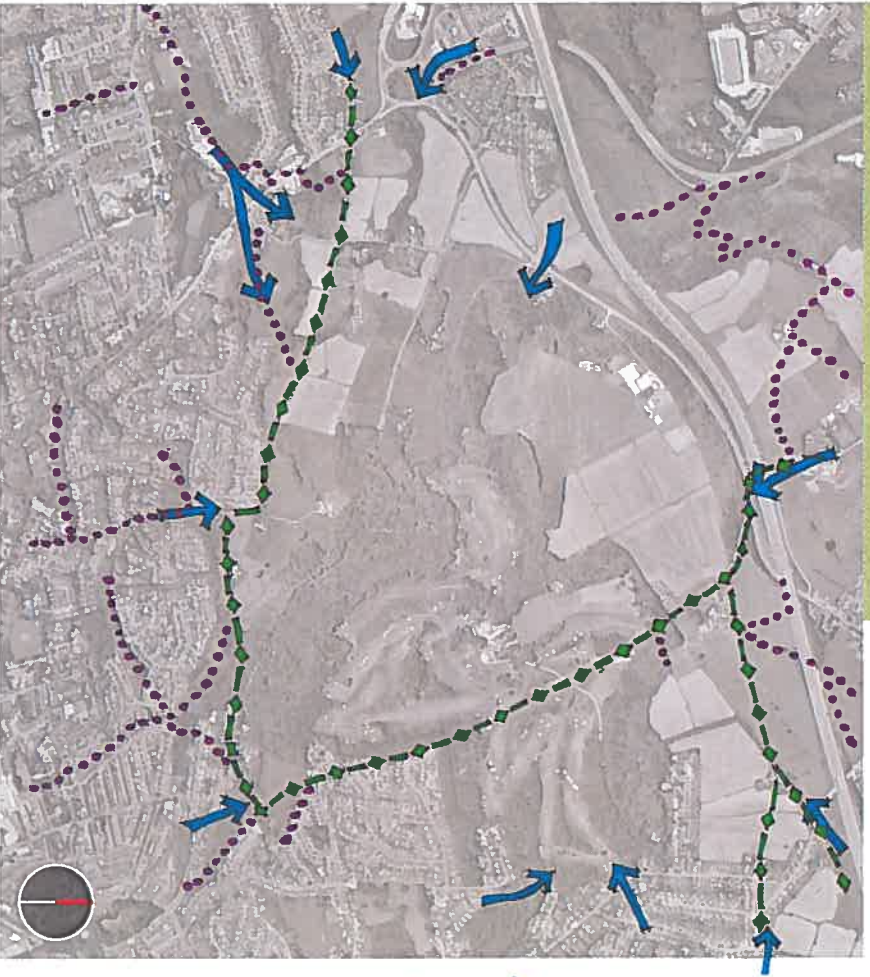


Diagram to show topography of site (from valley bottom in blue to hilltop in red)

4.04

statutory rights of way



Public footpaths, permissive ways & bridleways



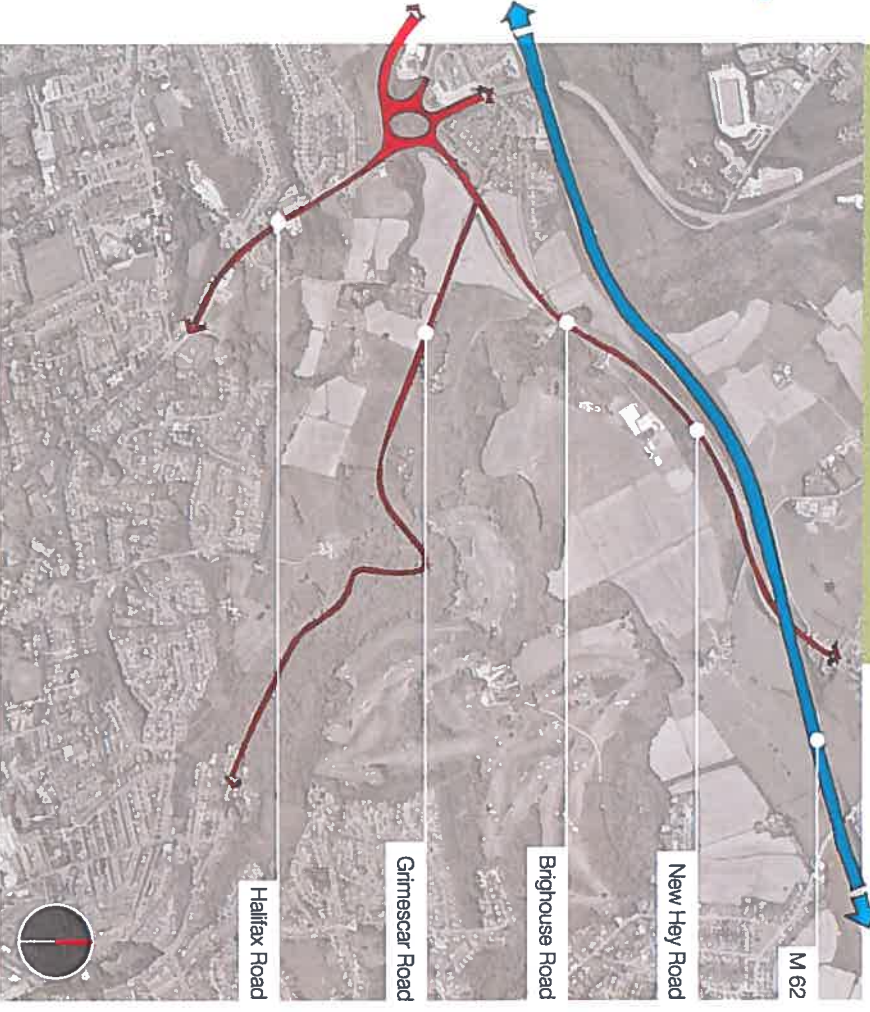
Kirklees Way



Key pedestrian access point

4.05

primary vehicle routes



Primary roads



M62 Motorway

4.06 additional survey information

For detailed information on other aspects of the site see:

Section 05: technical reports

- 5.01 highways & transportation
- 5.02 flood risk & drainage
- 5.03 utilities & renewable energy
- 5.04 ecology
- 5.05 archaeology
- 5.06 ground & land use
- 5.07 noise
- 5.08 air quality

Section 08: sustainability & integration

- 8.01 local facilities



05

technical reports

- 5.01 highways & transportation
- 5.02 flood risk & drainage
- 5.03 utilities & renewable energy
- 5.04 ecology
- 5.05 archaeology
- 5.06 ground & land use
- 5.07 noise
- 5.08 air quality

Analysis of the site identified a number of technical aspects that required consideration to inform the evolving masterplan concepts.

Research has been carried out to consider the issues and demonstrate that the site is suitable for development, the proposals are achievable and where necessary to explore options where mitigation is needed.

This section gives a synopsis of the research. Detailed reports on each topic have been prepared and have been submitted separately to Kirklees Council.



5.01 highways & transportation

Introduction

WSP have been commissioned to prepare a comprehensive Transport Assessment (TA) and Travel Plan (TP) to support the allocation of this mixed use development opportunity.

The TA considers in detail the highways and transportation issues relating to the proposed development and identifies what measures and improvements will be implemented to improve accessibility for all modes of travel. In conjunction with this the TP sets out a package of site-specific initiatives to improve the availability and choice of travel modes to and from the Site. Together, the TA and TP provide the mechanism for assessing and managing access to the Site.

The assessments have considered the existing conditions on the surrounding highway network as well as constraints across the site.

Full consultation has been held with Kirklees Council Highways, the Highways Agency and Metro in order to agree the broad scope and content of the TA and TP reports.

A range of improvements are proposed which go beyond catering for the development itself and after a wide benefit to the local highway and transportation network



Local highway network

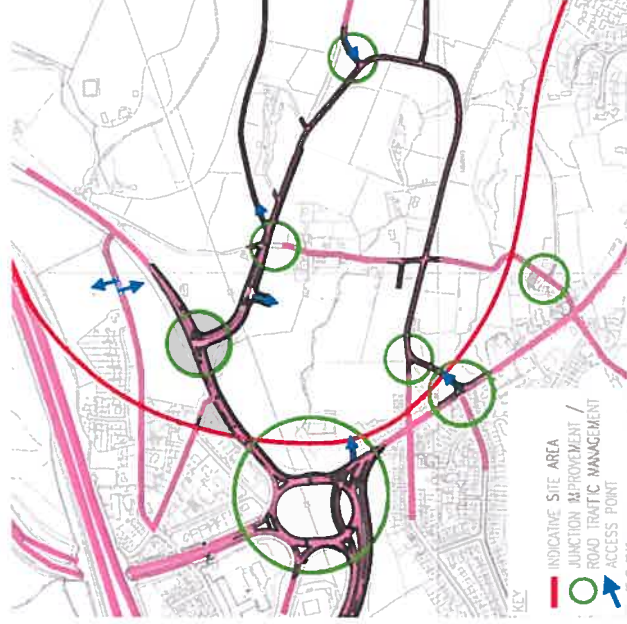
Site access arrangements

The majority of vehicular trips will access the site via an improved Ainley Top roundabout junction and Brighouse Road corridor.

The Grimescar Road (south)/Brighouse Road junction will be signalised and access to the commercial Gateway site and residential village will be taken from an improved and slightly re-aligned Grimescar Road.

Access to the commercial 'Hill Top' site adjacent to Brighouse Road will be provided from New Hey Road.

A secondary access to the residential village will be taken from Halifax Road to form a priority cross-roads with Birchington Avenue. Traffic management measures will be introduced on Yew Tree Road to the north and Burn Road to the south to ensure development trips do not egress onto Halifax Road from these unsuitable junctions.



Indicative site access arrangements

The proposed hotel and cricket club re-development at the Gateway site will be provided with a left-in only access from Halifax Road immediately south of Ainley Top roundabout. Egress from these plots will be back out onto either Grimescar Road or Yew Tree Road.

With respect to the Golf club re-development new access arrangements will be provided from Grimescar Road thereby delivering improved, direct access to the strategic highway network. The existing access from Lightridge Road will no longer be used as a vehicular route to the golf club.

The proposed site access arrangements also incorporate new pedestrian/cycle links and facilities including:

- Off-carriageway shared pedestrian/cycle route along Grimescar Road
- Controlled pedestrian crossings at Grimescar Road/Brighouse Road signalised junction
- Off-carriageway shared pedestrian/cycle route between Grimescar Road and Ainley Top roundabout
- Controlled crossings at the improved Ainley Top roundabout junction
- Dedicated pedestrian/cycleway greenway route through the site
- Overall footway provision improvement throughout the site

Site accessibility

Accessibility by foot & cycle

There are numerous local facilities situated in close proximity to the site including convenience stores, restaurants, pubs, educational facilities, pharmacy and GP surgery – these are all within a short walking and cycling time of the site. Furthermore it is proposed to provide additional, new facilities within the commercial and residential centres including retail and healthcare.

As well as providing convenient services to local residents and employees the majority of these facilities also provide accessible employment opportunities.

Site accessibility (cont.)

Accessibility by foot & cycle (cont.)

With respect to schools the site is in close proximity to Lindley Junior School, Selendine Nook secondary school and several nurseries. Local education facilities can also be accessed by school bus services.

It should be recognised that the proposed pedestrian/cycle improvements and mitigation measures will of course further enhance, encourage and improve the safety of trips by foot and cycle.

Public transport

The site benefits from the existing high frequency bus routes operating along the Halifax Road corridor which provide an attractive service to Huddersfield and Halifax.

An additional, less frequent, Huddersfield to Halifax service 343 operates along Yew Tree Road and Burn Road thereby routing through the site itself.



Proposed bus accessibility

To improve the public transport accessibility of the site further it is proposed to:

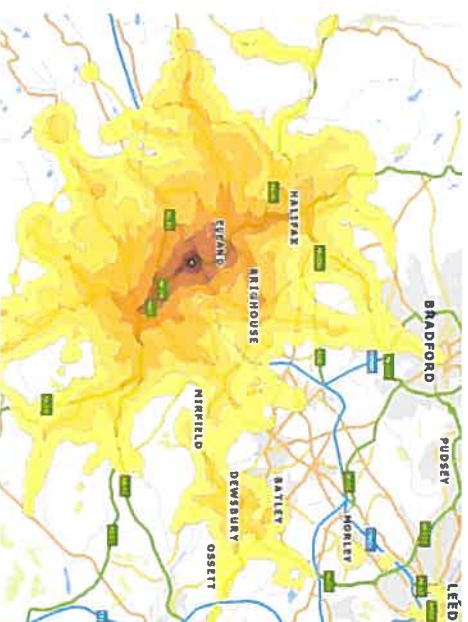
- Undertake improvements to existing bus stop infrastructure
- Provide new, modern bus stops as required
- As the site develops out to extend the route of the 343 bus service to extend and improve accessibility to the heart of the residential village as well as the Hill Top commercial units
- Increase the frequency of the diverted 343 bus service

In addition to the frequent commercial bus services which are accessible from the site there are also numerous school bus services that provide public transport to a variety of local schools.

Capacity assessments

Extensive traffic counts have been undertaken to permit the analysis of the existing and proposed improved highway network.

Trip generators for the proposed development have been derived based on information from the TRICS database. National statistics census data as well as existing operational facilities. These trips have then been assigned to the highway network using recognised gravity model and census data techniques.



Existing bus accessibility

Operational assessments of the proposed site access arrangements and off-site highway junctions have then been carried out. The results of the assessments confirm that:

- The substantial improvements proposed at the Ainley Top roundabout junction will significantly reduce queuing and delay, even allowing for the additional trips resulting from the site. This will benefit the local and strategic networks including the operation of the M62 at junction 24
- The proposed Brighouse Road/Grimscarc Road link and junction improvements will operate satisfactorily
- Development impact at the Halifax Road/Birkby Road signalised junction will be mitigated through improvements to signal control operation, lane re-allocation and rationalisation of vehicle movements
- Additional mitigation improvements will be provided along the Halifax Road corridor including enhancements to signal control operation.



GIS Walking accessibility isochrone plan

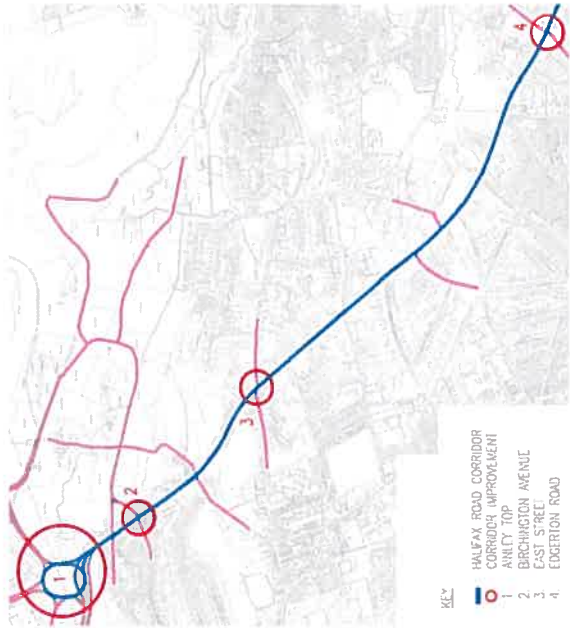
Accident history review

Accident data has been obtained from Kirklees Council for the most recent five year period for the study network. The data re-affirms the Council's concerns with respect to the frequency of accidents at Ainley Top roundabout – some 50 accidents over a five year period. The proposed improvements at this junction will improve safety by minimising conflicting vehicular movements, reducing speeds, improving gap acceptance and providing controlled pedestrian/cycle facilities.

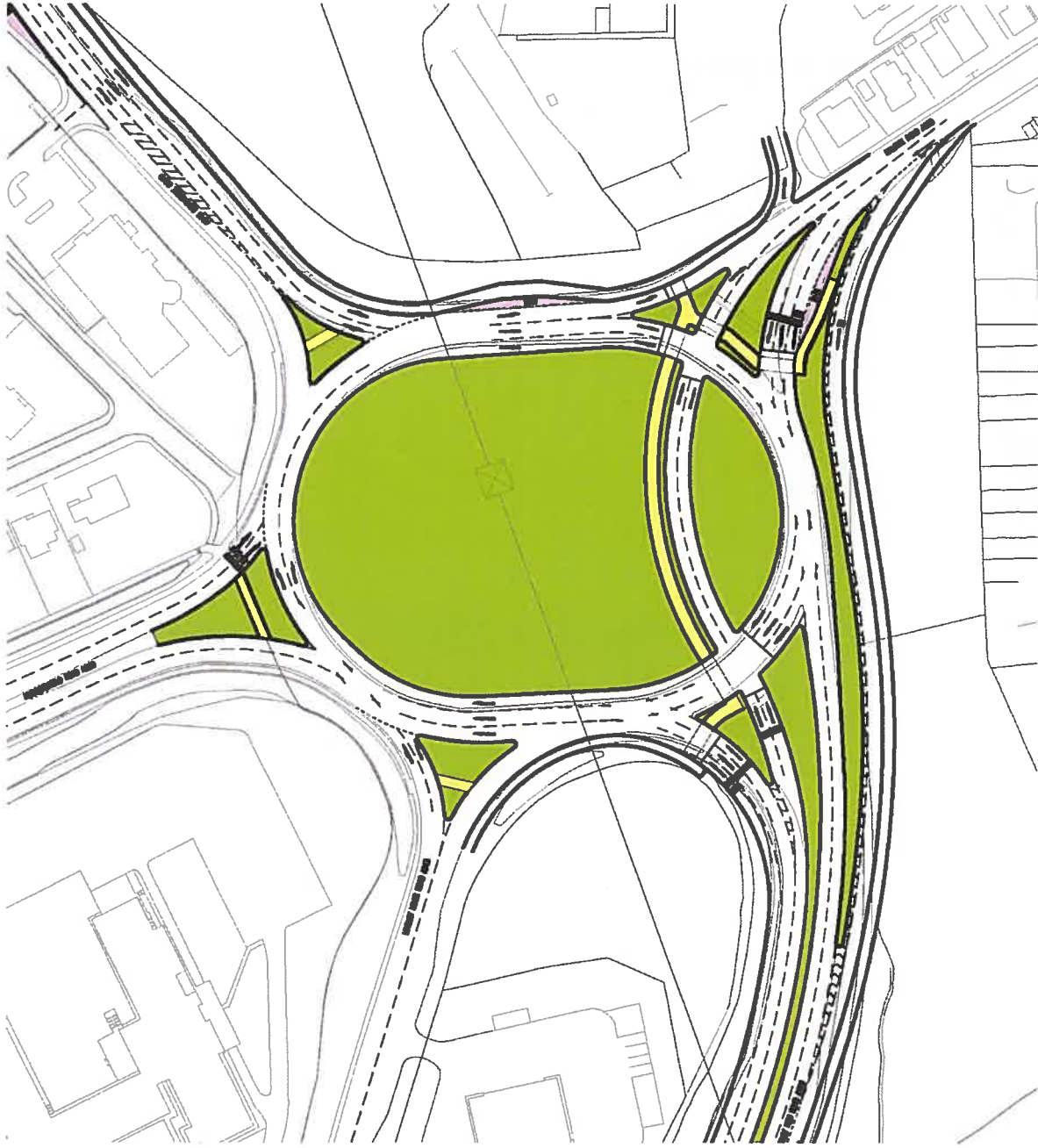
Safety improvements will also be provided at the Halifax Road/Birkby Road junction through the removal of various conflicting vehicular movements and improvements to pedestrian facilities.

Conclusion

From the extensive work undertaken it is concluded that there are no reasons on highway or transport grounds why the site should not be allocated for mixed use development, and that the proposed off-site highway and transportation works offer considerable benefit to the overall accessibility of Kirklees & Calderdale.



Proposed Halifax Road corridor improvements



Proposed Ainley Top roundabout capacity & safety improvements

The principles of drainage discharge have been agreed and are in line with the recommendations of the Flood Risk Assessment.

Flood risk

WSP Development and Transportation have been appointed by Thornhill Estates to undertake a Flood Risk Assessment (FRA) as supplementary documentation to support an application for allocation as part of the Local Development Framework process.

The objective of this study was to undertake a FRA in accordance with Planning Policy Statement 25 (PPS 25) – Development and Flood Risk. The report assesses flood risk to the proposed development and any impact on flood risk to other land as a result of the development.



The site is located within Flood Zone 1 on the Environment Agency Flood Zone Map, which is classed as being at low risk from fluvial or tidal/coastal flooding. This is land designated as having less than a 1 in 1000 year annual probability of river or seaflooding (<0.1%) in any year.

There is no known evidence of flooding as a result of fluvial, tidal, overland flow, sewer or groundwater flooding, therefore, it is considered that the flood risk to the site from these sources is low.

The amount of surface water generated on site will increase post-development. However, it is proposed that surface water discharge from the new development will be restricted to the existing greenfield runoff rate by on-site attenuation.

Sustainable Drainage Systems (SUDS) will be incorporated wherever practicable. Assessment of the technical feasibility of infiltration SUDS and the extent of their application will occur at the detailed design stage once site investigation data is available. A review of any leachable contaminants in the made ground should be undertaken prior to site permeability tests. Non-infiltration SUDS components should be incorporated if ground conditions limit the use of infiltration SUDS.

Gradients of external areas, where possible, will be designed to fall away from buildings, such that any overland flow resulting from extreme events would be channelled away from the entrances to the buildings. The accumulation of standing water would therefore not occur and so not pose a risk. It is recommended that floor levels are set 300 mm above existing ground levels, to mitigate against any flooding that may occur during an extreme rainfall event.

The proposed re-development should not increase flood risk to the site or to third party land providing that the suggested mitigation measures are implemented.

Drainage

In addition to the FRA, WSP Development and Transportation have undertaken a Drainage Strategy Assessment as an additional supporting document to the LDF application and to consider the available options for foul and surface water discharge from the site. This has included preliminary liaison with the relevant statutory bodies to agree the principles.

The Drainage Strategy, through discussions with Yorkshire Water, have identified that the existing foul drainage system (and the combined sewer network) has capacity to accept foul flows from the development and Yorkshire Water have agreed this principle subject to detailed design calculations based on a finalised land use proposal.

Due to the site's topography it is assumed that surface water currently discharges directly into the existing water courses that flow through the site. The Environment Agency have agreed that surface water from the proposed development can continue to discharge to the watercourses at an assumed current greenfield run-off rate of 5 l/s/ha.

To achieve this restricted run-off rate, SUDS proposals will be considered, the types being subject to the results of detailed site investigation. SUDS in the form of above ground swales, below ground tanks, permeable paving and rainwater harvesting may be suitable, although will be subject to detailed design and existing ground conditions.

A preliminary assessment of the site topography has identified that infiltration SUDS would not be suitable in this instance as it is generally recommended that surface drainage systems that are 100% reliant of infiltration are not used on steeply sloping sites, due to possible downstream flooding of low lying properties. For this reason non-infiltration SUDS proposals will be developed for the scheme.

5.03 utilities & renewable drainage

Utilities

WSPD&T have liaised with the local utility providers that are known to operate in the Kirklees region and that may have infrastructure in the area.

The results of these discussions have identified the presence of:

- existing combined sewers
- existing potable water mains (together with on-site private water supplies)
- existing low pressure gas mains
- a medium pressure gas main (Eiland to Huddersfield 12" grid)
- electricity cables throughout the site (including some overhead power lines have been identified)
- BT cables
- raw water sewerage infrastructure.



The majority of the above utility services run within existing highways and roads, however, there are some which run within the plots. Some of the utilities within the plots are local connections serving individual farms and houses, others are part of the wider utility network including the medium pressure gas main and overhead electricity cables.

As part of the utilities review WSP are in discussions with the utility providers regarding the existing capacity of the network to ensure that provision is made from the outset for minimal impact on the local network. Coupled with this, WSP&E are reviewing renewable energy options in line with the government objectives and local planning policy in terms of securing on-site renewable energy provision as described in more detail opposite.

Energy

WSP&E has been appointed by Thornhill Estates to undertake an initial energy appraisal of the site. WSP&E calculated peak and base energy demand of the proposed development using the accommodation schedule and indicative phasing plan provided in the market analysis report prepared by Jo Orrell Associates.

Energy demand for housing has been considered assuming all houses meet current CfSH level 4. The renewable energy options for the site have been developed in line with overall government objectives in terms of energy and sustainable development and have also considered the Kirklees Council on site renewable energy targets of 15% by 2015 and 20% by 2020. This assessment has indicated that, based on current marketable technologies, the following technologies will be suitable for consideration within the development moving forward.

The development is likely to begin construction between 2014 – 2016, therefore for the purposes of this study a 20% reduction in CO2 from on site renewable energy technologies has been used as the target. This will need to be considered on a Phase by phase basis and consider appropriate technologies / policies etc at that time. However, it is considered unlikely to alter the recommended technologies.

The following technologies have been considered in this assessment

Renewable technologies

- Wind turbines
- Solar PV
- Solar thermal
- Biomass (Boilers and CHP)

Low carbon technologies

- Gas combined heat and power
- Ground Source Heat Pumps
- Air Source Heat Pumps

As part of detailed design, it will be necessary to undertake detailed energy strategies that would consider current energy policy and CfSH/BREEAM criteria. Furthermore, passive design and microclimatic issues will be considered as the masterplan develops, to ensure that opportunities for carbon reduction in building through efficient design is maximised.

Extended phase I habitat survey & protected species surveys

WSPERG were commissioned to complete an extended Phase 1 Habitat Survey across the full site area.

Habitats on site are largely characteristic of the wider landscape and are typical of large farmed estates undergoing long-term management.

The site is largely undeveloped with only a relatively small number of houses and farms accessible from single-lane public highways. The survey site is effectively divided by its topography, with the ridge of the hill supporting woodland with Fixby Hall and Huddersfield Golf Club to the south and agricultural uses, including cow-grazed pasture and hay meadows to the north. Throughout the site, fields and features are generally delineated by dry stone walls, and where hedgerows are present these are largely defunct. Overall the site is characterised by extensive woodland blocks which have established along the ridge and down the steeper valley sides.



Habitats within the site are generally considered to be of lower intrinsic value consistent with long-term farming or more formal management, most notably within those areas developed into the Huddersfield Golf Club. Long-term formal or semi-formal management has resulted in less species-rich habitats of lower structural complexity. As a consequence of long-term management the majority of habitats within the site are generally of limited value and of importance at only the Site or Local level.

Established woodland blocks are assessed as being of greater intrinsic value for nature conservation. These areas are considered to be of up to District importance for nature conservation, representing a contribution to the ecological baseline of the site and supporting a wide range of species. Girmescar Wood has been identified as a non-statutory Site of Wildlife Significance.

Habitats on site have been subject to specific further surveys as follows:

Great crested newts

Four surveys were undertaken between April and June 2009 during the optimal surveying period for this species and comprised torch surveys, netting, egg searches and terrestrial searches, and bottle trapping. No GCN were recorded across the site, although other amphibians including the common smooth newt were recorded.

A review of historical data confirmed that there are no records for great crested newt in the 2km consultation buffer. The absence of this species from the site (both in terms of historical records and up-to-date site survey data) demonstrates that the species is not present within the site.

Reptiles

Surveys were undertaken between May and July 2009 during the optimal surveying period for this species and comprised the deployment of refugia over a 3 day period in May 2009 which were left for the period of a week. The refugia were lifted on seven separate visits in order to look for reptiles which use the refugia for basking or shelter. No reptiles were recorded across the site.

Bats

Emergence and Activity surveys were undertaken between June and September 2009. Emergence surveys were carried out after sunset and initially comprised a collection of various environmental readings. Outside buildings with potential for roosting bats, bat detectors were used. The following species of bats were recorded on site:

- Common Pipistrelle *Pipistrellus pipistrellus*
- Natterer's *Myotis nattereri*
- Whiskered/Brandt's *Myotis mystacinus/brandtii*
- Noctule *Myctalus noctula*
- Leisler's *Myctalus leisleri*

A bat roost was identified in the score board of the cricket pitch located at Ainley Top Cricket Ground and at least one bat was found to be roosting at The Barn at Upper Cote Farm. Several areas of the site including woodland north of Fixby Hall, Girmescar Wood and the golf course were found to have high potential for foraging and roosting bats. The open barn and pond to the east of West Lodge, and Fields and south of Girmescar Road, were identified as having high potential for foraging and commuting bats. The housing development to the south of the survey area was found to provide potential roosting opportunities for a number of bat species.

Further detailed bat surveys will be required to support detailed masterplan development and any planning applications. Expansion to existing habitats, restoration of former habitats, better woodland management, habitat connectivity through green infrastructure provision and retention of old buildings are all being considered as the masterplan develops, to ensure bats are appropriately mitigated and, where possible, their habitat enhanced.

Ecology is not considered to be a constraint to the allocation and subsequent development of the site.

Desk based assessment was undertaken by WSPE&E to establish sites of interest within the site boundary.

Key features include the conjectured line of a roman road located across the northern part of the site running in an east to west direction. The route of the Roman road is relatively well understood as running predominantly outside of the site area, broadly in an east-west direction, although the known eastern point of the site does sit within the site boundary and the western points lies on the periphery of the site boundary. The location of the roman road is known at 2 points, one in the north eastern corner of the site in the area of the proposed country park and the other located in the western part of the site to the north of Grimescar Road, below the line of the overhead cables. The known locations are shown on the picture to the right.

One scheduled ancient monument has also been identified – the Grimescar Roman tiliery (monument number 29899) located within Grimescar Wood, off Grimescar Road in the south of the site. This represents an archaeological site which has statutory protection from change to its fabric and also its setting. The archaeological site is currently relatively poorly understood and presents an opportunity for improvement.

A “road map” outlining the further archaeological evaluation that would be undertaken as part of the development of a master plan or planning application (if appropriate) has been drafted. This would involve targeted detailed desk based assessment of local areas of the site, followed up by targeted evaluation as appropriate. No built development is proposed in the area of the Roman tiliery, which presents an opportunity for improved access and signage to allow the long term protection and enjoyment of this asset for the local communities.

The general approach to archaeological evaluation has been discussed with West Yorkshire Archaeological Advisory Service (WYAAS) as advisors to Kirklees Council, who have confirmed that this is acceptable.

With the incorporation of a detailed archaeological evaluation of the site together with retention, where practicable, of archaeological assets, archaeology is not considered a constraints to the development of the site.



Ground conditions

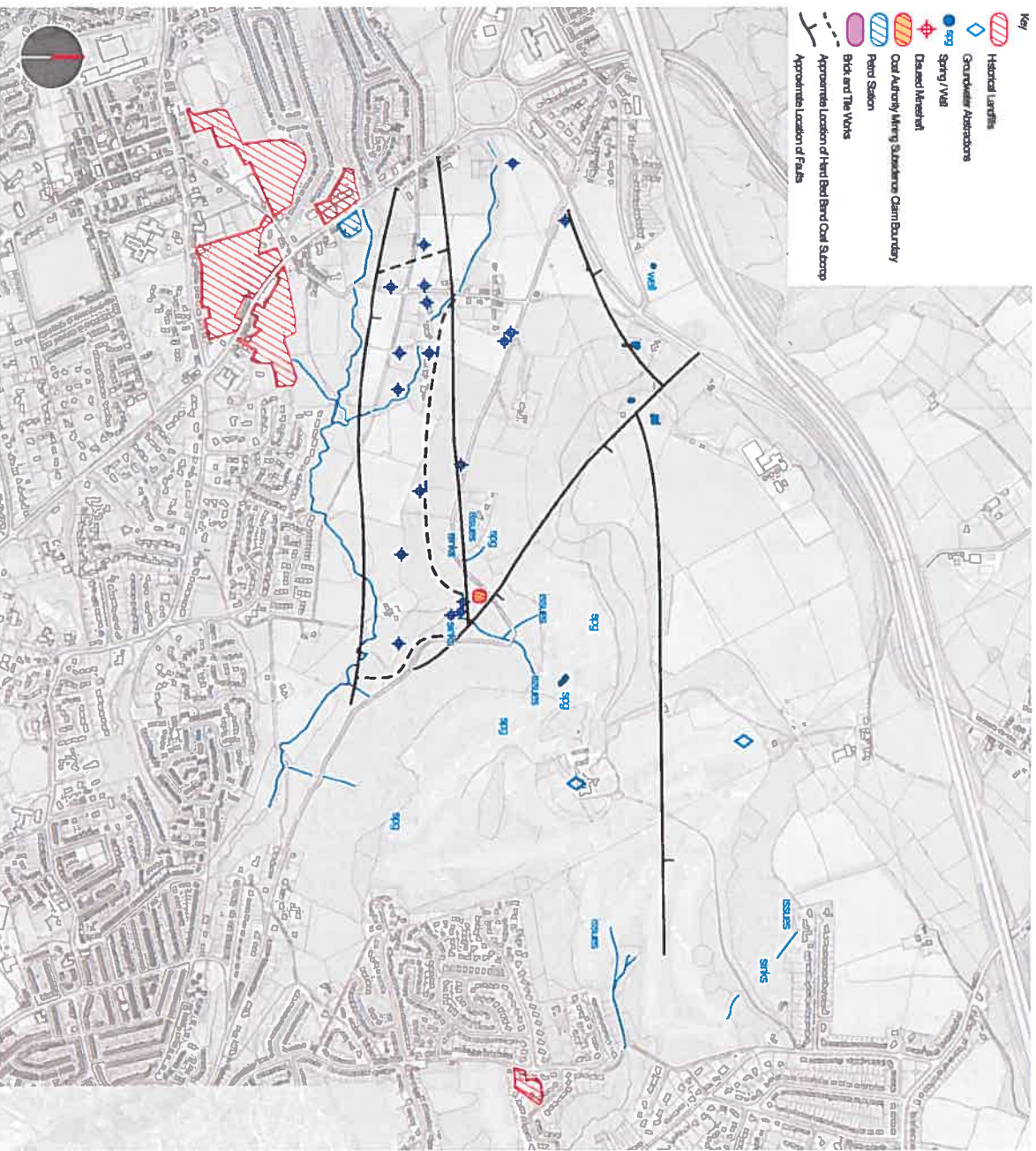
Desk study information has been collected including a search of historical maps, a review of geology, hydrogeology and an environmental data search. All available mining records have also been obtained from the Coal Authority and SYMAS (South Yorkshire Mining Advisory Service).

The site has not been subject to any previous industrial development, with the exception of mining activities, which have taken place from the 1850s. Known collieries were present on site and there are 20 known mineshafts, associated with these former mining activities within the southern area of the site, predominantly in the area proposed for residential development. There is no obvious evidence from historical maps or site visits) of any areas of tipped material e.g. colliery spoil.

As part of the design of the detailed layout of the site, an intrusive geotechnical and environmental investigation will be undertaken to establish ground conditions associated with previous mining including the location of any shafts, voids and coal seams. This will be coupled with a detailed mining desk based assessment to understand the broader ground conditions. Apart from localized contaminants associated with mining activities, widespread contamination is not anticipated.

Following the ground investigations a number of engineering and masterplanning solutions can be considered including for example grouting of mine workings, piles, mineshaft treatment, positioning of public open space over worked areas the ground conditions.

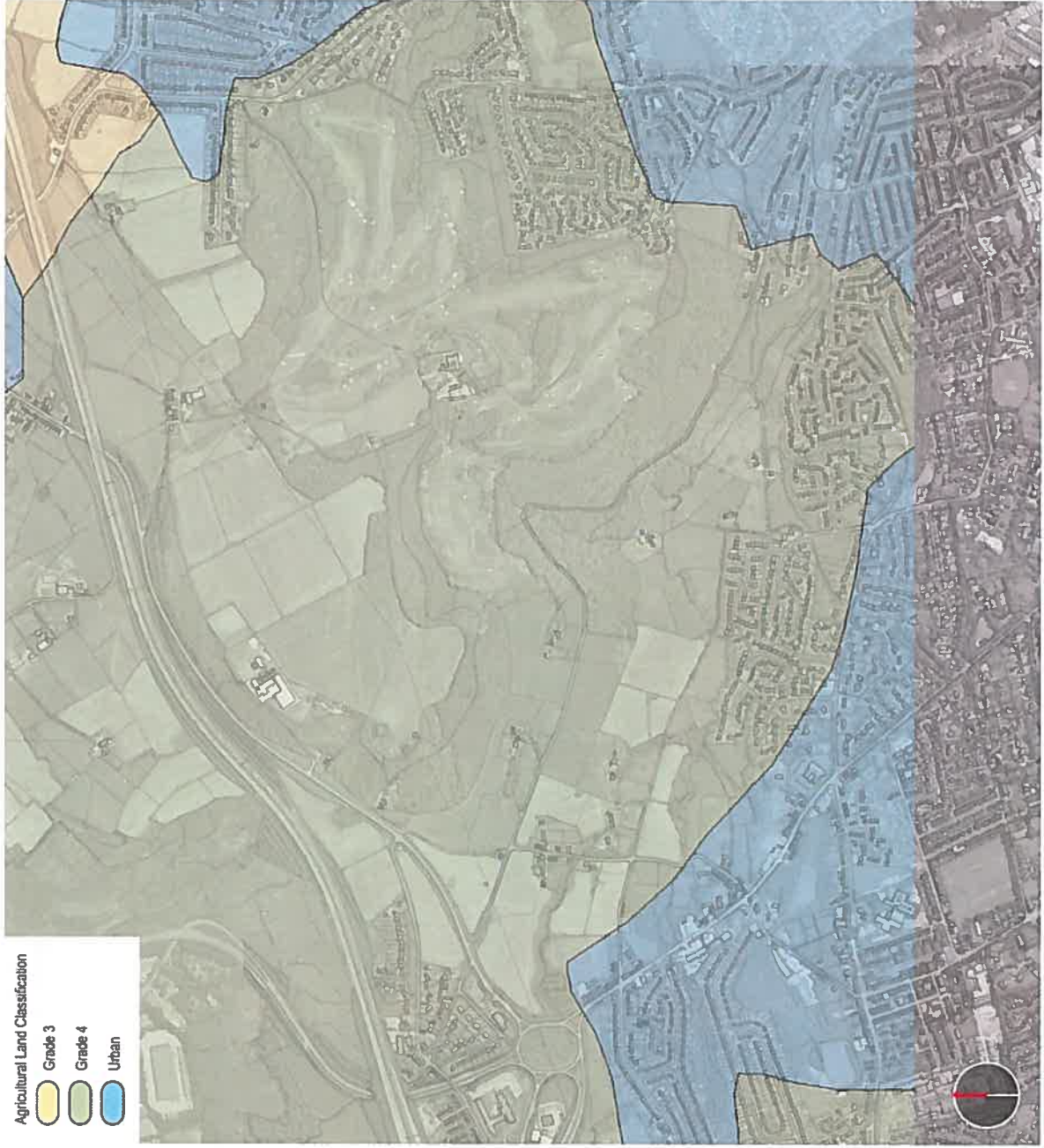
Ground conditions will not prevent development and can be dealt with by technical solutions.



Ground Conditions Plan

Agricultural land classification

A desk based assessment carried out by WSPE&E has shown that the majority of the site is classified according to the Ministry of Agriculture Fisheries and Food (MAFF) as being of Grade 4 agricultural land, which is considered to be low grade land, with a small area of land in the northeast of the site classified as grade 3. No built development is proposed in the north east of the site and as such, the higher value land will not be lost to built development. Through the implementation of an effective soil management strategy to protect higher quality top soil, the loss of agricultural land is not considered to pose a constraint to the development of the site. The diagram below shows an extract of the land classification in the northeast corner of the site.



Agricultural land classification plan

Surveys and desk-based assessment works were undertaken by WSP to establish the context of the site in relation to Noise and Air Quality.

The assessments are presented within the appendices of the Sustainability Appraisal. The key findings are provided below.

Noise

WSP Acoustics were appointed by Thornhill Estates to undertake a noise assessment in relation to the proposed development of the site. A noise survey was undertaken to establish the prevailing noise condition across the site. Measurements were taken at 2 locations on the principal source of noise in the area, (the M62) and the NEC noise categories were plotted across the site. Noise sensitive development in acceptable within areas categorized as NEC A and NEC B

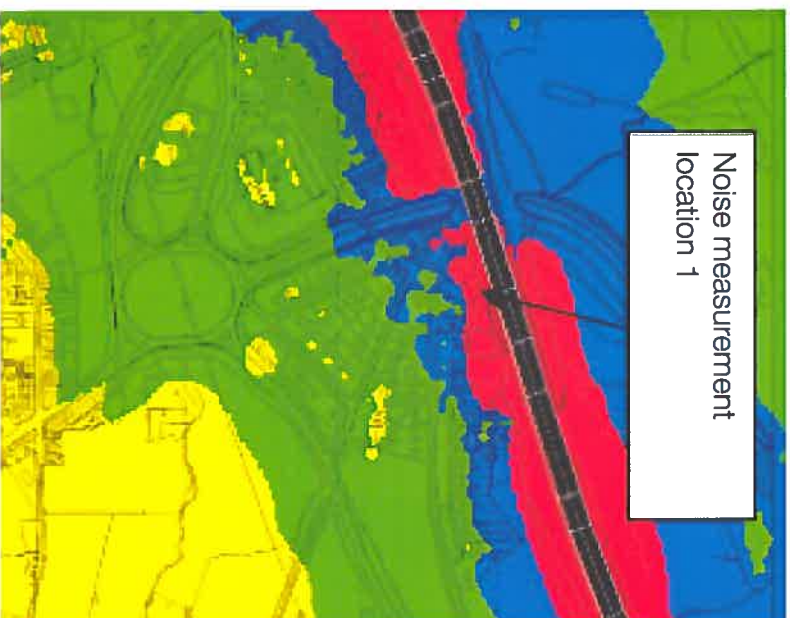
From these plots it can be seen that, for noise solely emanating from the M62, a large proportion of the site falls within NEC A, with areas closer to the motorway falling within NECs B and C. NEC D may apply within relatively small sections of the site located within close proximity to the M62 (within approximately 1.15m depending upon the local topography and presence or otherwise of intervening structures). No built development is currently proposed in areas falling under NEC Category D, sensitive development is focused in areas pertaining to category A.

The current proposed master plan has been developed such that all residential development is located within Noise Exposure Category A with respect to noise from the M62 motorway.

Whilst localized areas of higher Noise Exposure Categories may arise in close proximity to local road traffic routes, it is anticipated that the detail scheme design could be developed such that applicable noise assessment criteria stipulated by Kirklees Council could be achieved within such areas.

Appropriate site layout and design considerations should seek to ensure that any service yards and fixed plant items associated with the proposed commercial / business use aspects of the development should be located remote and well screened from existing and proposed noise sensitive receptors. Further more it will seek to include uses sensitive to noise in the areas of the site defined by NEC Category A and B.

An extract of the NEC day time and night time plot are shown on the figures on the left and right respectively



WSPE&E were commissioned to carry out an initial appraisal of local air quality conditions, which involved a desk top review of readily available information and informal consultations with Kirklees Environmental Health. The site does not lie within an Air Quality Management Area.

Desk based evaluation has highlighted indicative stand off zones from Halifax Road, which represents a worst case scenario. No sensitive development is proposed within this area.

Residential properties, and any other proposed sensitive uses, will be set back as far as possible from the key pollutant sources outlined above (i.e. the M62 and A629). Non-sensitive uses (e.g. employment uses) have been located towards the outskirts of the site, nearest to the main roads, with the more sensitive uses being located in a more central position. The non-sensitive uses will act as a 'buffer' between the pollutant source and the most sensitive receptors.

Extensive improvements to the traffic network proposed as part of the development may improve the local air quality through a reduction in standing traffic. The implications of NO2 and other air pollutants on the site and surrounding areas will be fully evaluated as the site develops.



06 development concept

- 6.01 concept aims & objectives
- 6.02 primary character zones
- 6.03 secondary character zones
- 6.04 green corridor
- 6.05 landscape framework
- 6.06 vehicle access
- 6.07 pedestrian routes
- 6.08 use zones
- 6.09 use zone: hilltop golf & leisure
- 6.10 use zone: commercial gateway
- 6.11 use zone: residential village

This section sets out broad concepts on character, access and uses, to establish the suitability of the site to deliver a sustainable mixed use development.



6.01 primary character zones

The existing area has a strong and unique character that can be used to give this development a strong sense of place.

Capitalising on this unique character will allow:

- A feeling of community
- Avoid the area becoming a 'faceless' suburb
- Form a high quality destination to help market the development
- Add to the variety of developments within Huddersfield

Principle area for built development



Focusing built development to the east and south, in a natural extension of existing areas, allows ease of access for pedestrians and vehicles and to local bus routes and services. The availability of utilities and infrastructure in this location will support the viability of development by minimising site establishment costs.

Urban gateway



Forming a strong urban edge to the primary routes will enhance the entry into Huddersfield from the M62, improving public perception of the town.

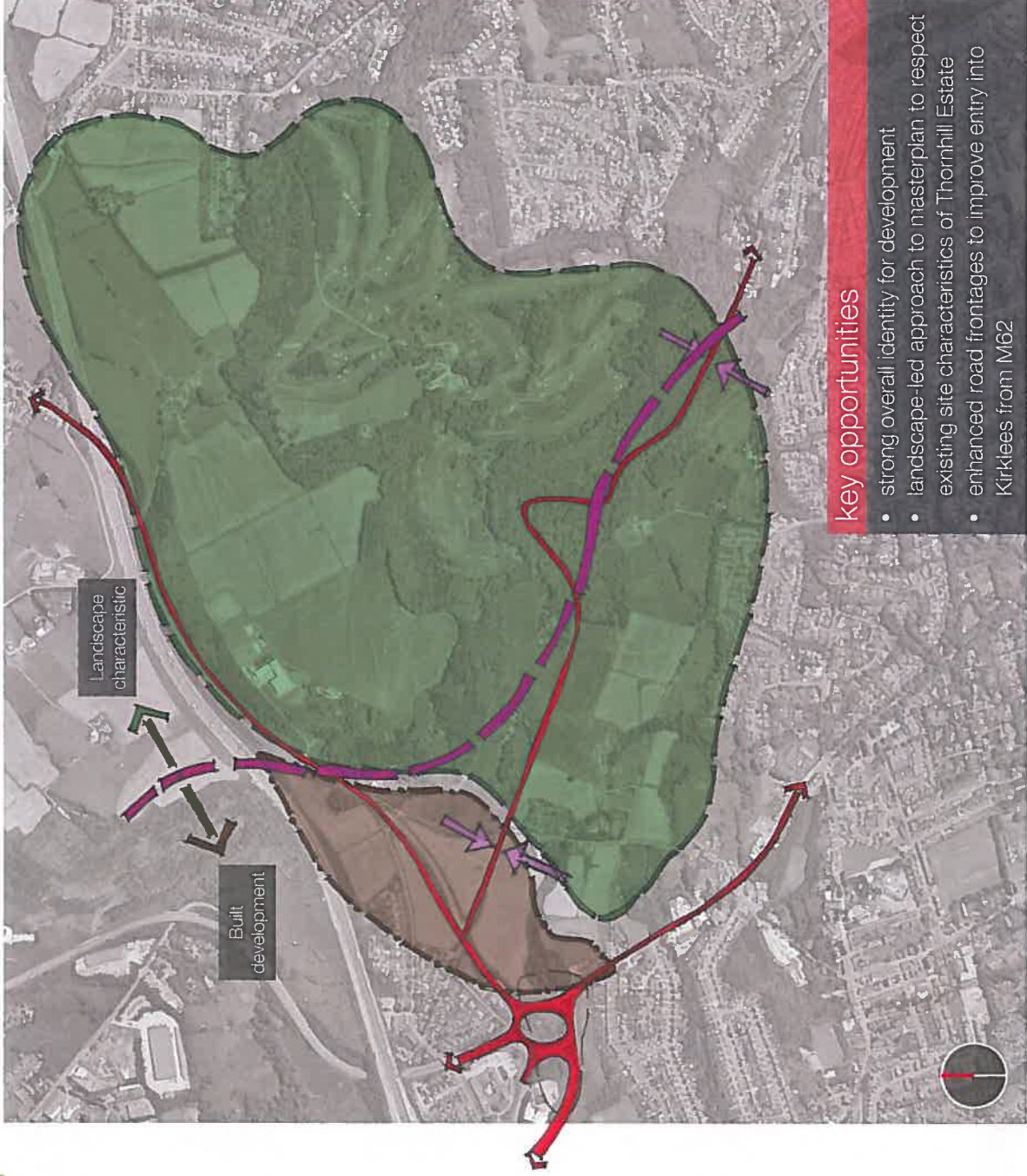
Prominent views of new development on the northern boundary can showcase Kirklees from the M62.

Mixed residential-led community



The character of the Thornhill Estate area is the key to generating a unique sense of place for the development.

The development will have a contained form, strong character, controllable access points and historic connections that can be utilized to form a new identifiable mixed use development which is distinct from yet complementary to adjoining suburbs.



key opportunities

- strong overall identity for development
- landscape-led approach to masterplan to respect existing site characteristics of Thornhill Estate
- enhanced road frontages to improve entry into Kirklees from M62

6.02






secondary character zones

The site has an overarching distinctive character, within which there are smaller pockets with their own local character.

Building on these smaller character areas can add richness of experience for the local and wider community.

It can also help integrate new development into the landscape by tailoring materials, layouts, scale, grain and urban design features to suit the specific location. This protects the existing unique character of the area.

Sequences of spaces and character areas add to the variety of experience and can be used for an interesting network of pedestrian routes.

-  **Valley bottom**
Linear spaces – intimate - semi-enclosed
-  **Hillside**
Promontory locations – open – long & mid-distance views
-  **Woodland spine**
Established large scale landscape feature – rich habitats
-  **Hillside top**
Open plateau – blustery – long views
-  **Hilltop bowl**
Semi enclosed – intimate – secret – long views

