Cass associates

Bank Hey, Blackburn

Masterplan

March 2020

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Project Number:	*Report Reference:*	*Issue Detail:*
1225	MP-001-F	09/03/2020

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01 Introduction

The land between Heys Lane and Bog Height Road (the site) is allocated for housing development in the Blackburn with Darwen Local Plan Part 2. The plan estimates that around 315 houses could be built on the site by 2026 and acknowledges that housing development is expected to continue beyond 2026.

The Local Plan Part 2 was adopted in December 2015. Along with the previously adopted Core Strategy (Local Plan Part 1), it aims to shape the future development of Blackburn with Darwen in order to create jobs, attract and retain a skilled labour force, and strengthen the Borough's competitive position in the North West. It identifies strategic land allocations which are essential to delivering these objectives and sets out development management policies which will be used when assessing planning applications.

The Local Plan requires the site to be brought forward in line with a masterplan. This must be agreed by the Council prior to the granting of planning permission for development on any part of the site.

This document presents the Bank Hey masterplan. It provides guidance for the development of the site and will be used to inform the determination of planning applications.

View of existing trees adjacent to Bog Height Road

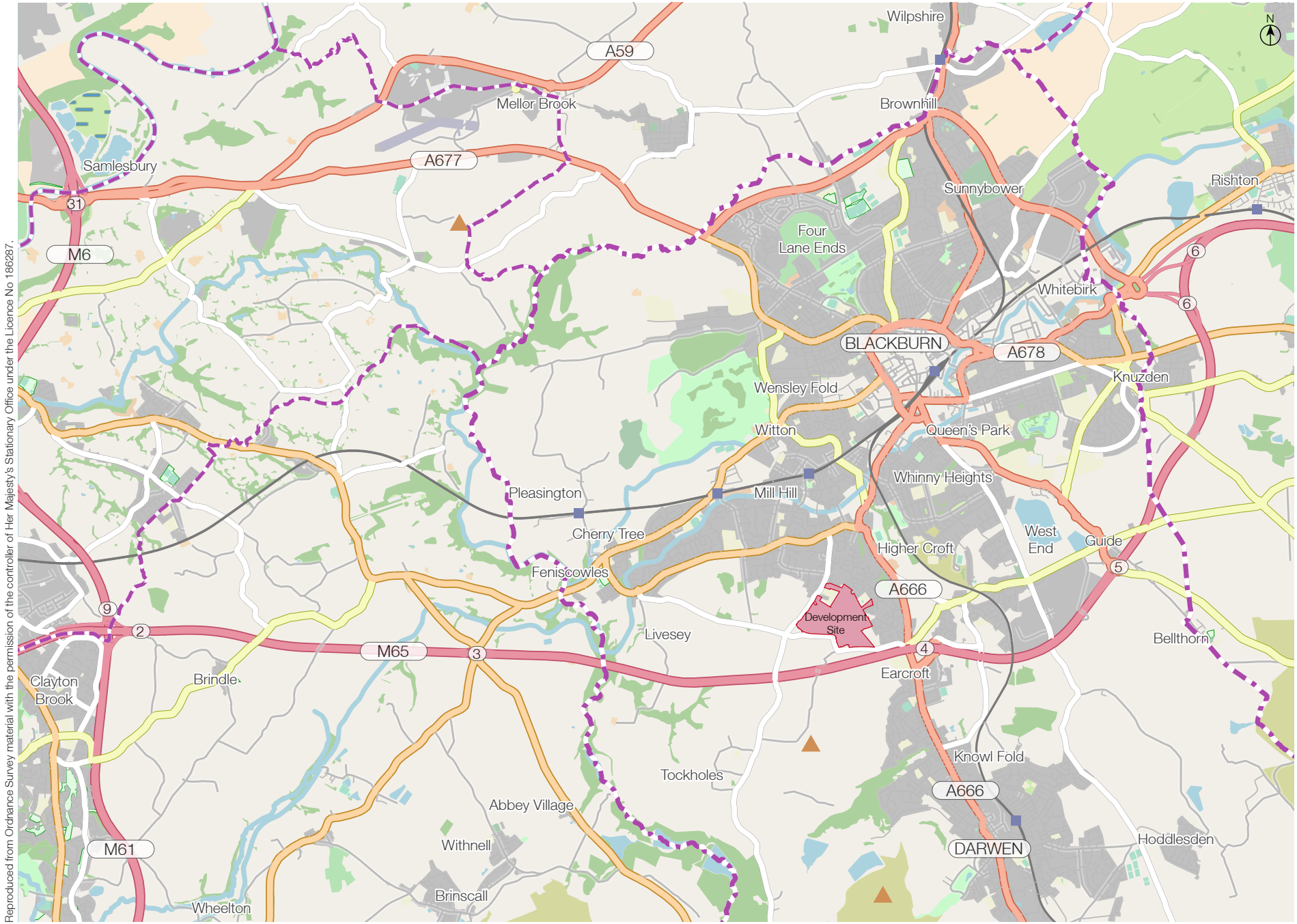


Figure 1 - Location Plan

01 Introduction

1.1 The Site

The site is located on the southern edge of Blackburn, approximately three kilometres from Blackburn town centre and 600 metres west of junction 4 of the M65 motorway. It comprises around 41 hectares of largely agricultural land which is used principally for grazing. The site is bordered to the north and east by existing residential areas. The western boundary is formed by Heys Lane, beyond which lies agricultural land and then the Gib Lane development. The southern boundary of the site is formed by Bog Height Road, beyond which lies the M65 motorway, the West Pennine Moors and the town of Darwen. The site boundary is shown in Figure 2.

The site is rural in character but adjoins the suburban fringe of Blackburn. It comprises a series of enclosed fields. Gritstone walls, trees and hedges define the edge of the site and field boundaries.

The site rises significantly from the north and east towards the south- west. There are panoramic views from the site at the highest point.

The site is in five separate ownerships, as shown in Figure 3.

1.2 Purpose of the Masterplan

The preparation of a masterplan is essential for ensuring that development on the site is brought forward in a comprehensive manner. It will guide new development so that it is successfully integrated with the existing urban area, is delivered in a cohesive manner and it creates a distinctive new neighbourhood consistent with the Pennine countryside.

The masterplan provides spatial principles for land use, transport, design and green infrastructure. Fundamentally, it gives a structure to the development of the whole site and ensures that it is not developed in a piecemeal manner.

Another important role of the document is to co-ordinate the provision of critical infrastructure which is necessary for achieving the vision for Bank Hey and the delivery of a successful place. The masterplan will shape development on the site to achieve high quality design, to retain important features and assets and to be sensitive to its location. It also provides more detailed guidance on the anticipated built form in individual character areas and provides a clear brief in terms of the quality of the development.

The masterplan bridges the gap between the strategic policy aspirations set out in the Local Plan and the detailed development proposals that will be the subject of specific planning applications. It is a guide for the preparation of development proposals and a framework against which planning applications for the site will be assessed. It will be an important material consideration in the determination of planning applications.

1 View south east of the site from Jack Walker Way

Figure 2 - Aerial Photograph

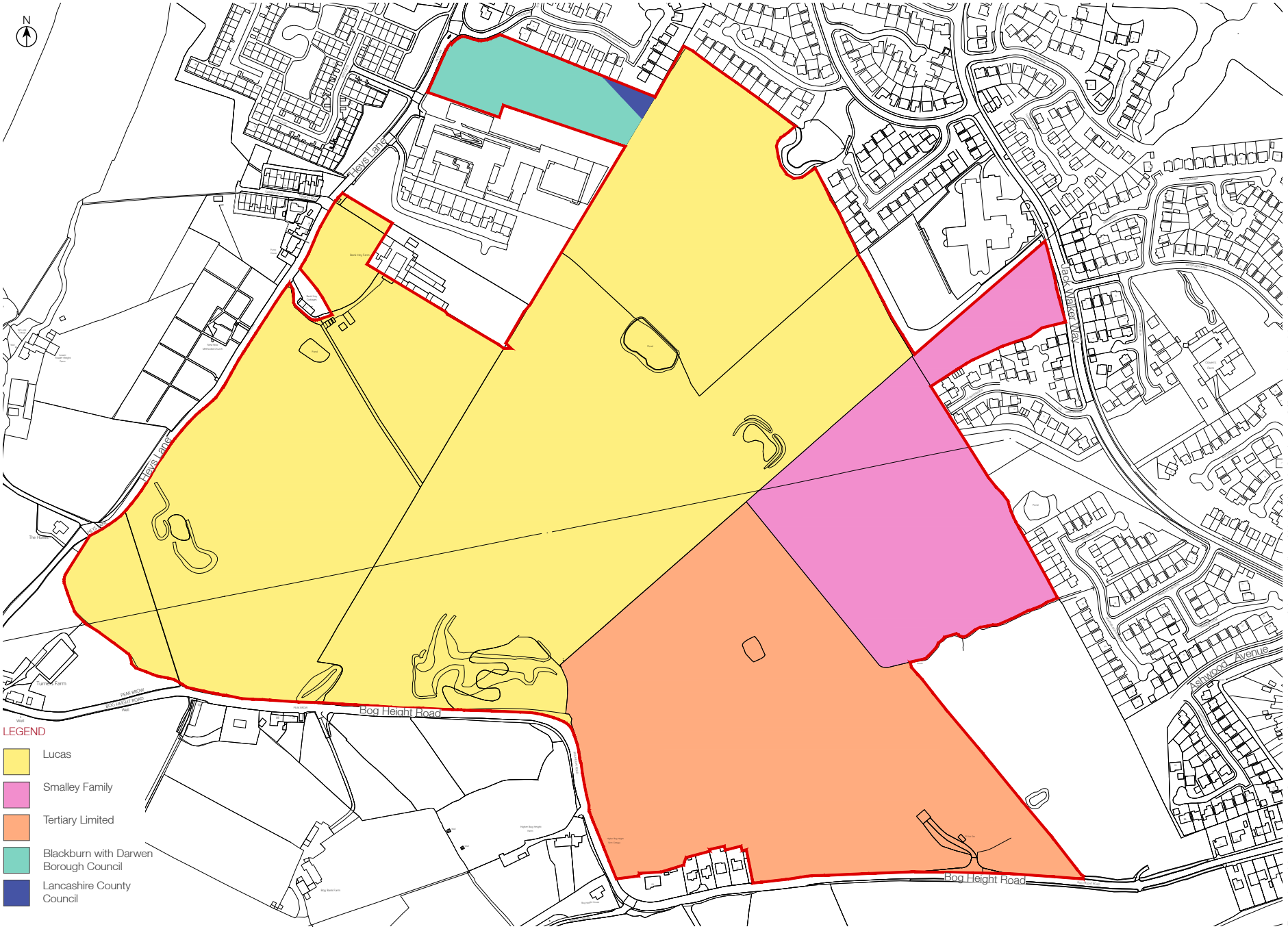


Figure 3 - Site Ownership

01 Introduction

1.3 Producing the Masterplan

The project team has worked in collaboration with the owners of the land and with Blackburn with Darwen Council to develop this masterplan for the site.

The masterplan is informed by a series of detailed technical studies which have been completed to provide a robust evidence base. These include surveys and reports to examine specific features of the site and to assess the potential impacts of development in this location:

- Topographical Survey
- Phase 1 and Initial Phase 2 Site Investigation Report
- Phase 1 Habitat Survey,
- Drainage and Flood Risk Assessment
- Transport Assessment
- Air Quality Assessment
- Consultation Report

A summary of this background evidence is provided in Section 3.

The process of producing the masterplan has included public consultation. This has been an important part of the process which has highlighted matters that are of particular local concern.

A public exhibition took place on the 7th December 2017. Feedback was received for a period of six weeks after this date.

A total of 96 representations were received during this consultation period. A report summarising the comments received and the response of the project team to frequently asked questions has been assembled. This report has been published alongside the masterplan.

The key concerns raised by local people fall under a number of headings:

New Housing

- Concentrate development on brownfield sites rather than edge of town locations.
- New housing could overlook and overshadow existing properties.

Greenspace and Existing Features

- Can existing features such as woodland and dry stone walls be retained?
- Who will maintain the green spaces?
- There is a need to protect habitats that are important for wildlife.

Local Amenities

- The impact on local schools which are already oversubscribed.
- Increased pressure on health services.

Transport and Traffic

- The capacity of Heys Lane and Bog Height Road to accept the traffic generated by new development.
- Concerns about the new link between Bog Height Road and Ashwood Avenue, particularly in relation to impacts on Jack Walker Way and its junction with the A666.
- Parking issues around the Redeemer primary school.

Drainage

- The drainage proposed on the site will need sufficient capacity to ensure that neighbouring properties are not flooded or affected in any way.
- The drainage network on the site and the watercourses that lead from the site will need to be properly maintained.

01 Introduction

1.4 The Structure Of The Masterplan

The masterplan has three main sections. The first section provides additional context and background information about the site. Specifically, Chapter 2 provides an overview of the national and local planning policy context and Chapter 3 summarises the key issues that emerged from the evidence base prepared to support the masterplan.

The second section of the masterplan establishes the principles that will guide the development of the site. Chapter 4 sets out a strategic vision for the site and identifies a number of development objectives. The masterplan framework itself, which is the overarching plan to guide the quantum and layout of development across the site, is set out in Chapter 5. The subsequent chapters provide key guiding principles in relation to transport (Chapter 6), green infrastructure (Chapter 7) and the approach to built form and public realm (Chapter 8).

The final section of the masterplan is a framework for delivery. Chapter 9 sets out the planning application requirements for development proposals on the site, identifies infrastructure requirements to support the development and incorporates a phasing plan showing the proposed sequence of development. This chapter also provides details of how local infrastructure will be improved in a co-ordinated and phased way.

View from within the site looking north east towards the Fernhurst estate

02 Planning Policy Context

2.1 National Planning Policy Context

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied.

A core principle of the NPPF is to proactively drive and support sustainable economic development to deliver the homes, infrastructure and thriving local places that the country needs. It seeks to boost significantly the supply of housing and widen the choice of high quality homes and requires local planning authorities to identify key sites which are critical for meeting the objectively assessed needs for market and affordable housing in their area.

The NPPF also emphasises the importance of securing high quality design and recognises that good design is a key aspect of sustainable development and is indivisible from good planning. The Framework highlights the importance of planning positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes. It recommends that local character should be respected and reinforced to reflect local distinctiveness whilst not preventing or discouraging innovative development which raises the standard of design within an area.

The national Planning Practice Guidance provides further advice on securing high standards of design in new development. It emphasises the importance of successfully integrating new development with its surrounding context and encourages new development to be distinctive. It needs to respond to natural features and locally distinctive patterns of development, incorporate attractive and well-connected permeable street networks and integrate a system of easily accessible open and green spaces.

The Planning Practice Guidance also recognises that masterplans can be important tools for achieving good design. It notes that masterplans can set out a strategy for a new development including its general layout and scale and can be used to set the most important parameters for an area such as the mix of uses, requirements for open space or transport infrastructure, the amount and scale of buildings and the quality of buildings.

Existing greenspace off Jack Walker Way

Highpoint marker post

02 Planning Policy Context

2.2 The Core Strategy (Local Plan Part 1)

The Core Strategy provides an overarching planning document for Blackburn with Darwen. It sets priorities for the future development of the Borough for a 15 to 20 year period, including how much and what types of development there should be, where it should be focused, when it is likely to take place, and how it will be delivered.

The Core Strategy seeks to provide for the development of approximately 9,000 new houses between 2011 and 2026 and contains a Targeted Growth Strategy (Policy CS1) which seeks to direct the majority of new development in the Borough to the urban areas of Blackburn and Darwen.

The strategy does, however, recognise that there is a finite supply of land for development in the urban area and that the continued concentration of development in this area is unlikely to be sustainable. It also acknowledges there may be insufficient development sites in the urban area that are capable of supporting the Council's aspirations for delivering more high quality housing of a type which may require the use of land in attractive settings.

The Core Strategy therefore identifies a potential need for some growth in the urban area during the Plan period and, if necessary, a limited number of small scale urban extensions. The Core Strategy states that any changes to the urban boundary will be determined through a Site Allocations and Development Management Policies Plan. Core Strategy Policy CS5 indicates that the first preference for locating any urban extension sites will be on land not currently in the Green Belt.

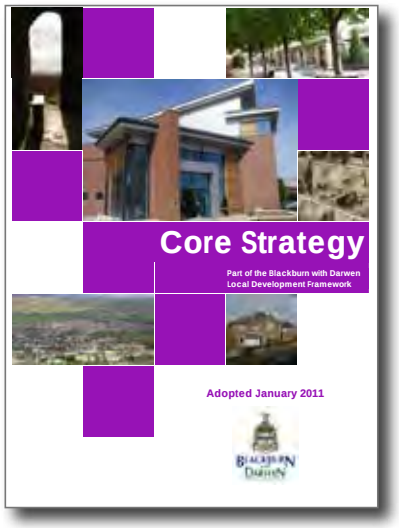
2.3 Local Plan Part 2 : Site Allocations and Development Management Policies

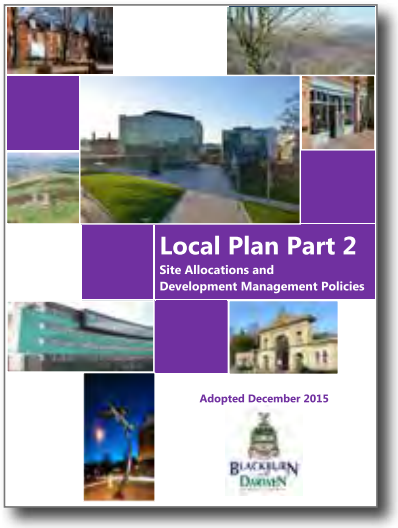
The Local Plan Part 2 was adopted in December 2015. It is based on the development strategy contained in the Core Strategy and seeks to support its implementation by identifying strategic land allocations that are essential for delivering Blackburn with Darwen Council's objectives.

The Part 2 Plan identifies a series of sites which are considered to be central to the delivery of the Council's overall strategy for new housing, including key sites in urban regeneration areas, major urban sites and a number of urban extensions.

The land to the east of Bank Hey is an urban extension site that has been identified in the Local Plan Part 2 as a housing allocation. It estimates that 315 houses could be built on the site by 2026 but acknowledges that housing development is expected to continue beyond 2026. A number of key development considerations are identified for the site, including the need for development to minimise impacts on the countryside, to protect important landscape features and to control surface water run-off.

The development considerations also require that the housing should be brought forward in line with a masterplan to be agreed by the Council prior to the granting of planning permission for any part of the development.





Site 16/10 - Land east of Heys Lane Blackburn

Key Development Considerations:

1. This site is to be brought forward in line with a masterplan taking account of site 16/9 West of Gib Lane and the area south of Broken Stones Road previously granted planning permission for a holiday lodge complex. The masterplan must be agreed by the Council prior to the granting of planning permission for any part of the site.

2. The site adjoins the West Pennine Moors, and will be required to be designed so as to minimise the impact of development on the countryside, and to enhance access to the countryside.

3. Protection of the setting of designated heritage assets – there is a listed building adjacent to the western boundary of the site on Heys Lane and Bog Bank Farmhouse, a Grade II listed building, is located close to the site. Any development proposal should conserve the setting and significance of the listed buildings.

4. Incorporation of overhead lines into design masterplan. Statutory safety clearances between overhead lines, the ground, and built structures must not be infringed.

5 United Utilities are unable to supply water to properties at this location above 180 metres, investment in a pumped supply or dedicated service reservoir would be required.

6 A contribution is required towards the provision of additional primary school capacity.

7 Contribution towards necessary local highways improvements.

8 Potential ecological impacts should be considered due to the greenfield nature of the site, and important features, such as woodland and hedgerows, protected.

9 Completion of appropriate ground investigation works to establish the extent of any ground contamination and whether any mitigation measures are required. There is infilled land in the area, and a known landfill on site.

02 Planning Policy Context

2.4 Supplementary Planning Documents

A number of Supplementary Planning Documents (SPD) have been prepared to provide additional detail to policies set out in the Local Plan. These give additional, more detailed planning guidance on specific issues. Those of relevance to the land to Bank Hey include:

Residential Design Guide Supplementary Planning Document

The SPD provides targeted advice to enhance the quality of new homes and residential places across the Borough. It seeks to ensure that new development reflects the area's special character and promotes the highest standards in design. The SPD also aims to ensure that the new homes and residential places in the borough are on a par with, or even exceed, the most attractive and popular historic residential areas in Blackburn, Darwen and the outlying villages.

Green Infrastructure and Ecological Networks Supplementary Planning Document

This relates to the protection, improvement and creation of green infrastructure and ecological networks. It aims to make the most of opportunities to enhance the natural environment.

The SPD identifies significant parts of the site as Stepping Stones. These are areas of local ecological importance and areas of priority habitat. The masterplan will need to recognise this ecological role and maintain natural corridors which link the site to surrounding areas and create long term, continuous areas of habitat. Unbroken corridors of natural habitat which is suitably managed will go some way to an overall net biodiversity gain at the site.

Other Guidance

1. Borough Design Guide

Although this is no longer a formally adopted SPD as it hangs off former Local Plan policies, the information in it remains useful guidance which should inform planning policy. The guide outlines a series of principles for securing high quality urban design and provides general guidance to promote better design on individual sites/developments. The guidance is not intended to provide design solutions for every eventuality. Instead it seeks to raise awareness of good design and encourages an innovative design-led approach to development.

2. Nationally Applied Guidance

Reference should also be made to design guidance that is applicable across the United Kingdom as a whole. Particular examples are Building for Life 12 and the National Design Guide which aim to secure new housing which is attractive, functional and sustainable. Also important is Secured By Design which aims to minimise the risk of crime through well conceived developments.

Existing sloping topography

Distant view of Darwen Tower

03 Evidence Base

A wide range of technical studies have been produced to provide a robust base for the preparation of the masterplan. These studies provide a thorough appraisal of the site and its strategic context and highlight a number of physical and environmental constraints and opportunities which will influence the future development of the site.

This evidence base provides a foundation that has helped to shape the masterplan and the development. A summary of the key findings of this work, and the implications for the masterplan, is provided below.

View north west towards Heys Lane

View south showing the site topography

View south west towards Bog Height Road

View along northern boundary

03 Evidence Base

3.1 Topography

The character of the landscape changes from north to south. In the north, the land is gently sloping with a more enclosed character. To the south the slopes steepen, rising to a high point on the boundary with Bog Height Road.

The site slopes from its lowest point at the northern corner at around 154m AOD generally towards the southern boundary. The site reaches its highest point of 226m AOD on the southern boundary adjacent to properties 87 and 88 Bog Height Road.

It is important to ensure that there is a considered response to the topography of the site. In particular, development should take full account of topography and respond to the characteristics of the site.

3.2 Ground Conditions

Terra Consult Limited has carried out a preliminary site investigation (desk study) and has followed this with an initial intrusive site investigation. The conclusions which arise from this work are set out in a Phase 1 and Initial Phase 2 Site Investigation Report. This has informed the preparation of the masterplan.

The report identifies that potential sources of contamination are likely to be associated with the landfill and made ground in the central southern sector of the site. The findings of the exploratory boreholes and changes in topography have been used to estimate the extent of landfill material. It is likely that the landfill material will need to be processed but further investigation is recommended to characterise the material. Chemical analysis so far of soil samples from the landfill area have shown that there are no concentrations of contaminants which are of concern for the housing proposal. Surface water samples show very low concentrations of contaminants. There is no indication that landfill material is causing a deleterious effect to water quality. Notwithstanding this, more detailed investigation is recommended and a full Remediation Strategy will be required.

Beyond the area of landfill there are natural materials with layers of topsoil, glacial fill and bedrock (mainly sandstone and local zones of mudstone). The site investigation report provides guidance on geotechnical design, foundations and other environmental requirements across the different parts of the site.

Existing overhead power lines

Existing boundary trees along Bog Height Road

Figure 4 - Site Topography

03 Evidence Base

3.3 Flood Risk

An assessment of the potential risk of flooding has been undertaken in accordance with the requirements of the National Planning Policy Framework-Technical Guidance and local flood assessment documentation, including the Blackburn with Darwen Local Flood Management Strategy and Stage 2 Strategic Flood Risk Assessment. The main flood risk is considered to be overland flow and surface water runoff generated through an overall decrease in site permeability.

The potential flood risk associated with overland flows from the surrounding external catchment area impacting upon the site can be considered as negligible, although overland flow from greenfield open-space within the developable land boundaries may need to be intercepted and conveyed to appropriate drainage controls to prevent impacts upon the proposed housing. The design of drainage to intercept surface water runoff from any public open spaces should be undertaken as part of the further detailed surface water drainage design to ensure that the surface water drainage strategy for the proposed housing will not be adversely influenced under extreme rainfall conditions.

Flood mapping for planning from the Environment Agency shows the proposed development site to be fully in Flood Zone 1, with the risk of flooding to the development of the site from all other sources (fluvial, groundwater and sewer) considered to be low or negligible. There have been no recorded instances of historic flooding at the site.

The proposals for managing surface water run-off from the proposed development are based on no increase in flow rates of surface water discharged into the local sewerage system or drainage network. Attenuation of increased surface water volumes will be provided where necessary to ensure that flows are reduced to external areas to an acceptable Greenfield rate for all events up to and including the 1 in 100 year + 40% climate change rainfall event. The drainage strategy shows that all runoff generated within the housing areas can be managed and attenuated on site, up to and including the 1 in 100 year + 40% climate change rainfall events. (There is no flooding of the conceptual surface water drainage for the 1 in 30 year + 40% climate change rainfall events.)

The final design of the drainage network will be in accordance with criteria set by the Environment Agency and lead local flooding authority, who in this instance will be Blackburn with Darwen Council. The proposed development will not increase flood risk to the site or to third party land provided that the suggested mitigation measures proposed within the Flood Risk Assessment and Surface Water Drainage Strategy are implemented.

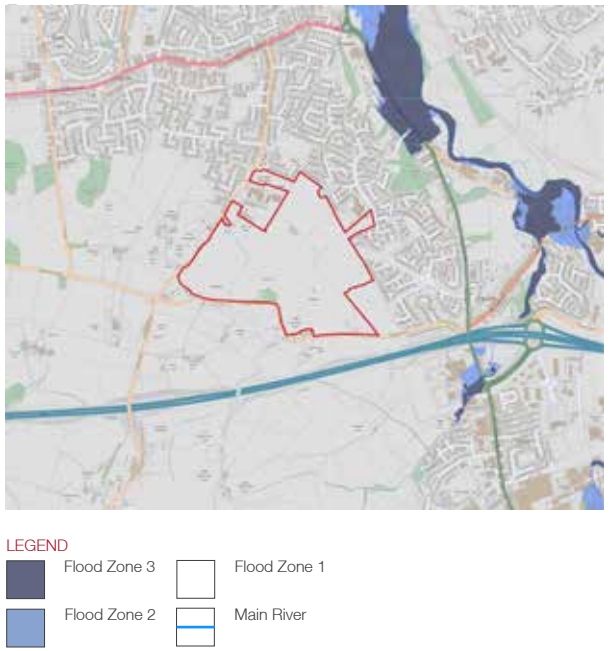


Figure 5 - Environment Agency Flood Risk Map

03 Evidence Base

3.4 Landscape and Visual Assessment/ Views

The site adjoins the urban area and is bordered to the east and north by existing residential development. The site is not subject to any formal local or statutory landscape designations.

The site is rural in character and comprises sloping pasture contained by field boundaries. These are formed by gritstone walls, mature and semi-mature trees and hedges.

The site is predominantly open in character but there are wooded areas and tree belts across the site, notably on the southern boundary close to Bog Height Road. These are valuable landscape features which contribute to the character of the area and the development should seek to retain and enhance these features to help integrate it with the local landscape.

There are prominent views towards the site from the surrounding area and the topography of the site provides opportunities for broad panoramic views in all directions. At the southern part of the site in particular, there are far reaching views south to the more elevated areas of the West Pennine Moors and to prominent landmarks such as Darwen Tower. There are panoramic views of Blackburn to the north.

The development should seek to capitalise upon these views but the siting of buildings and infrastructure should also be carefully conceived to account for the long distance views towards the site from the surrounding area.

2 Panoramic view looking north west

3 Panoramic view looking north towards Blackburn

4 Panoramic view looking north east towards the Fernhurst estate

5 Panoramic view looking south west over existing grazed pasture

6 Panoramic view looking north from the high point adjacent to Bog Height Road

7 Panoramic view looking south east from the public footpath adjacent to Bank Heys Cottages

03 Evidence Base

3.5 Ecology

The southern portion of the site is dominated by poor semi-improved pasture and marshy grassland with the ground sloping, often steeply to the north. Two small areas of low ecological value woodland are located within this area, one growing on flat ground along the southern perimeter and the second on sloping ground to the north-east. Habitat occurring on steeper, non-wooded slopes is species poor acid grassland.

The northern portion of the site is characterised by flatter ground and is dominated by improved pasture together with sections of hedgerows and linear scrub. There are a number of scattered ponds together with field drains and ditches and a section of watercourse which follows a natural course. Scattered mature trees occur around much of the perimeter.

There are no statutory environmental designations covering the site, although it falls within the impact zone of the West Pennine Moors Site of Special Scientific Interest (SSSI), located approximately 2 km to the south and is adjacent to Higher Bog Height Pasture Biological Heritage Site (BHS).

A significant part of the site is identified as Stepping Stones. These are areas of ecological importance and, as such, Policies 9 and 40 of the Local Plan Part 2 (page 12) should be taken into account. There is an emphasis on preserving the most significant habitats, maintaining the integrity of ecological networks and creating new habitats, including multi-functional public open space.

Future ecological surveys at the planning application stage should focus on assessing the value of the site for ground nesting birds and determining the presence of legally protected species, including great crested newts, bats and slow worms, together with notable species such as brown hare and hedgehog.

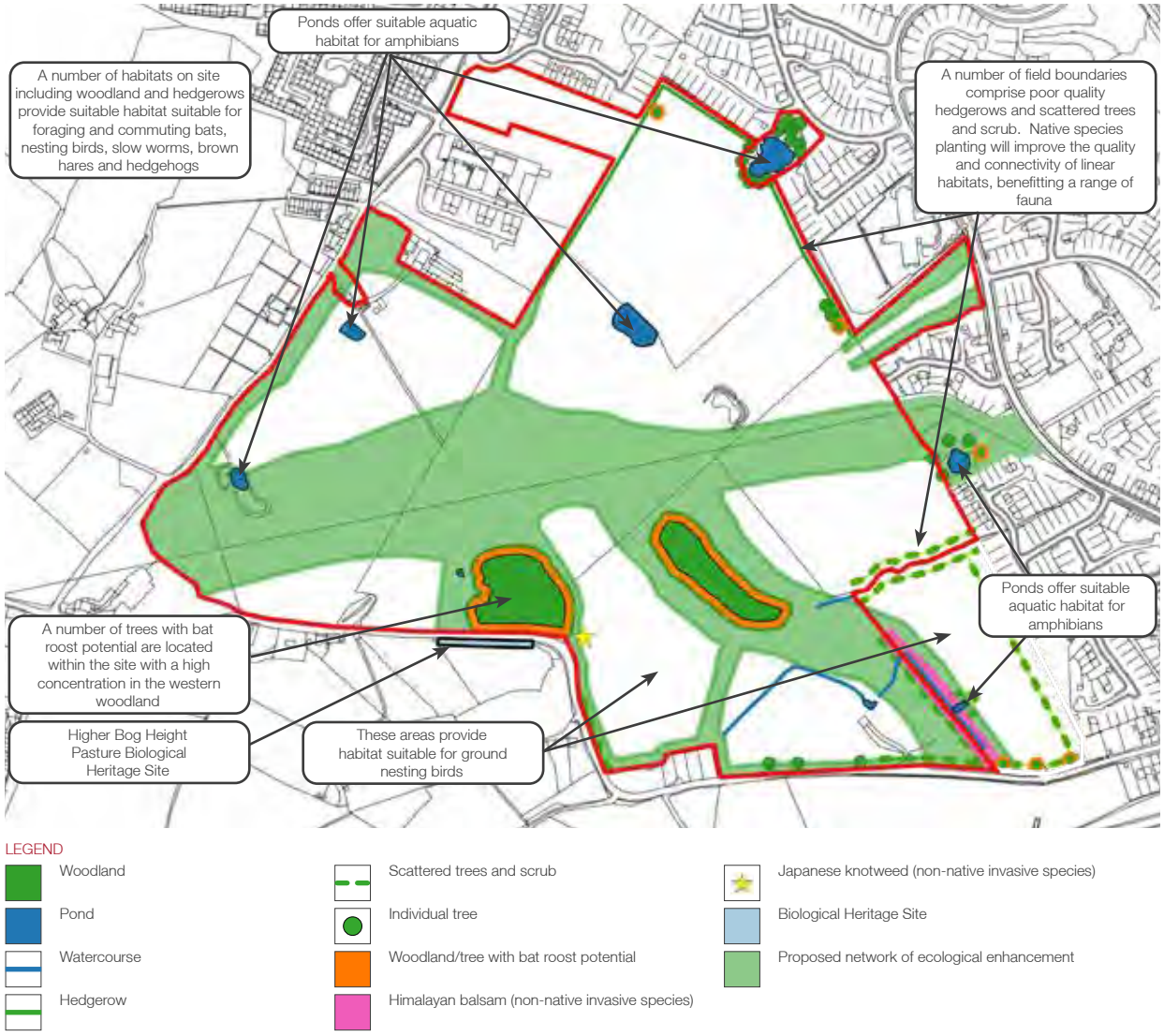


Figure 6 - Ecological Constraints and Opportunities Plan

03 Evidence Base

3.6 Traffic and Transportation Analysis

The development is divided into eight plots of land. The plots can be served by up to six new points of access onto the surrounding road network. Pedestrian and cycle only accesses will be provided throughout the site, connecting all plots. The development will be permeable for pedestrians and cyclists from all directions. The development will incorporate many new routes for leisure walking by making the whole site accessible by all for the first time.

The initial phase of development will be supported by two new points of access for pedestrian, cycle and vehicular movement. The first access point will be located just to the south of Redeemer School on Jack Walker Way and to the north of Water Meadows. It will take the form of a simple priority junction and will extend the shared cycle/footway infrastructure currently provided. Traffic regulation orders may be required to ensure that occasional parking at pick up and drop off times for the school does not impact on visibility splays out of the junction. The second point of access into the first phase of residential development will be taken from Moorland Road to the north of Eden School. Moorland Road connects to Heys Lane via an existing mini roundabout junction.

Capacity assessments have been undertaken at a number of off-site junctions around the development site. The assessments show that at the majority of the junctions there is either sufficient spare capacity to accommodate the proposed development or the development will not have a material impact on the operation of these junctions.

The junctions which operate close to or at capacity either currently or with the proposed development in place are discussed below alongside any proposed improvements:

1 Livesey Branch Road / Heys Lane Junction

The mini roundabout junction of Livesey Branch Road with Heys Lane requires improvements which are to be agreed.

2 Bog Height Road junction with the A666 Bolton Road

The Bog Height Road junction with the A666 Bolton Road is predicted to operate over capacity in the AM peak period with development traffic from the committed Gib Lane and Sappi Paper Mill residential developments alone. Blackburn with Darwen Council (BwD) have collected contributions from the Gib Lane developer towards the mitigation of traffic impacts at this location.

The BwD preferred strategy for the mitigation of the impact of committed development traffic at this junction is the provision of a new link road connecting Bog Height Road to Ashwood Avenue. This would bypass the eastern section of Bog Height Road.

Without the link road or any other form of mitigation at this junction assessment suggests that development of up to 455 units on the site should be realised without significantly worsening the level of service at this junction.

3 Jack Walker Way / A666 Bolton Road (northern junction)

The Jack Walker Way (N) junction with the A666 will accommodate future levels of peak hour demand with committed development traffic allowed for and Bank Hey built out. However, this is dependent on improvements being undertaken.

A standard roundabout with improved pedestrian crossing facilities will offer the optimum level of service for vehicular traffic. There is no requirement for land outside existing adopted highway boundaries, or for any physical widening of the carriageway.

4 Jack Walker Way / A666 Bolton Road (southern junction)

The Jack Walker Way / A666 Bolton Road (southern junction) operates within capacity without the link road in place and the Bank Hey development built out to 455 units. There would be a need for interim improvements to be undertaken, entirely within adopted highway land, which would take the form of creating two right turn lanes out of Jack Walker Way and the necessary accommodation works associated with that provision.

With the link road in place, and the full build out and occupation of all units on the site, the reassignment of existing and committed development traffic from Bog Height Road through this junction will create capacity issues without further additional improvement. An improvement scheme has been tested in this location which shows that the junction will continue to operate within capacity in 2030 with the full development and

03 Evidence Base

the link road in place. This scheme takes the form of additional widening into Jack Walker Way to lengthen the double right turn facility and widening into the western verge of the A666 south of Jack Walker Way to create separate left turn and ahead lanes.

3.7 Services and Utilities

The incoming services to the development will be obtained from the existing electricity, gas, water and telecommunications networks around the site. The utility companies will confirm what requirements they have to ensure that there is sufficient capacity within the distribution networks in the area to serve the developments.

In all instances the incoming services will be routed under pavements or designated service strips to the side of roadways or footways to be adopted in compliance with current Council highway design guidance. All roadway crossings will be ducted with additional ducts installed to allow the future installation of services without excavation of the finished road surfaces.

The surfaces will be arranged generally as detailed in the National Joint Utilities Group design guidance and to the requirements of the utility providers.

Electricity, gas and water meters will be located in meter boxes and be easily accessible to allow them to be read, maintained and isolated when necessary. The meter boxes will, where possible, be flush mounted on the outside, flank wall of all properties.

Power

It is anticipated that the power supply will be obtained at 11,000 volts. Connections will be gained from existing substations. The high voltage ring main cables will be routed along the spine roads to serve new 11,000 to 400 volt substations located within the development areas. The low voltage distribution to individual properties will be obtained from the sub stations and routed under pavements or in verges. Duct crossings will be installed as part of the infrastructure works to allow the distribution cabling to be installed without excavation of roadways.

Gas

Supplies will be taken at medium pressure to the site along the verges adjacent to the main access roads into the site. The primary mains will be routed through the development following the spine road network. Pressure reducing sets will be located within the development areas within purpose built enclosures. Gas supplies will be routed to the individual property meters at low pressure from the pressure reducing sets.

Telecoms

The development will be serviced for telecommunications from the existing infrastructure that runs past the site on Heys Lane and Jack Walker Way. Ducting, cabling and service pillar(s) will be installed as part of the infrastructure works along the development spine roads to allow for the final cabling to the properties once constructed.

Water

The development will be serviced from existing water mains located to the west of the site on Heys Lane and to the east on Jack Walker Way.

The water main pipework will be extended from the point of connection through the site following the spine road network. Provision will be made for connections from the main to the meters at the individual properties. The new main will be made live once a firm load is on line to avoid contamination or legionella problems.

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3.8 Green Space Analysis

New residential development will contribute towards the provision of high quality open space. The nearest public open space is Lower Darwen Recreation Ground, approximately 500 metres to the east of the site. The neighbourhood more generally is currently deficient in access to parks and gardens and amenity greenspace.

The site is close to open countryside. Two public rights of way run across the site. There is an exceptional opportunity to link new (and existing) development to the broader public rights of way network.

There are also opportunities to provide large areas of open space within the development. The new open space will need to account of the overhead power lines, the topography and areas of woodland. The greenspace will include footpaths and cycleways, areas of landscape planting, the sustainable drainage infrastructure and equipped play areas, possibly in the form of linear trails.

Public right of way adjacent to Bank Heys Cottages

03 Evidence Base

3.9 Educational Needs

Taking into account the planned growth which is set out in the Local Plan Part 2, the Local Education Authority has identified a need for a new primary school to serve new developments in the south western sector of Blackburn. Land has been reserved at the Gib Lane development. The options to increase primary school capacity are either a contribution to the new school at the Gib Lane development or a contribution to assist in funding the expansion of another primary school.

Secondary school places have been provided through the Building Schools for the Future programme. This has been calibrated to support projected population growth. Planning for secondary education is carried out across a wider geographical area and, as such, it is less sensitive than primary education provision to the location of new development. There is sufficient capacity in secondary schools in the borough to support the new development at the present time. This will be kept under review.

The Heights Free School

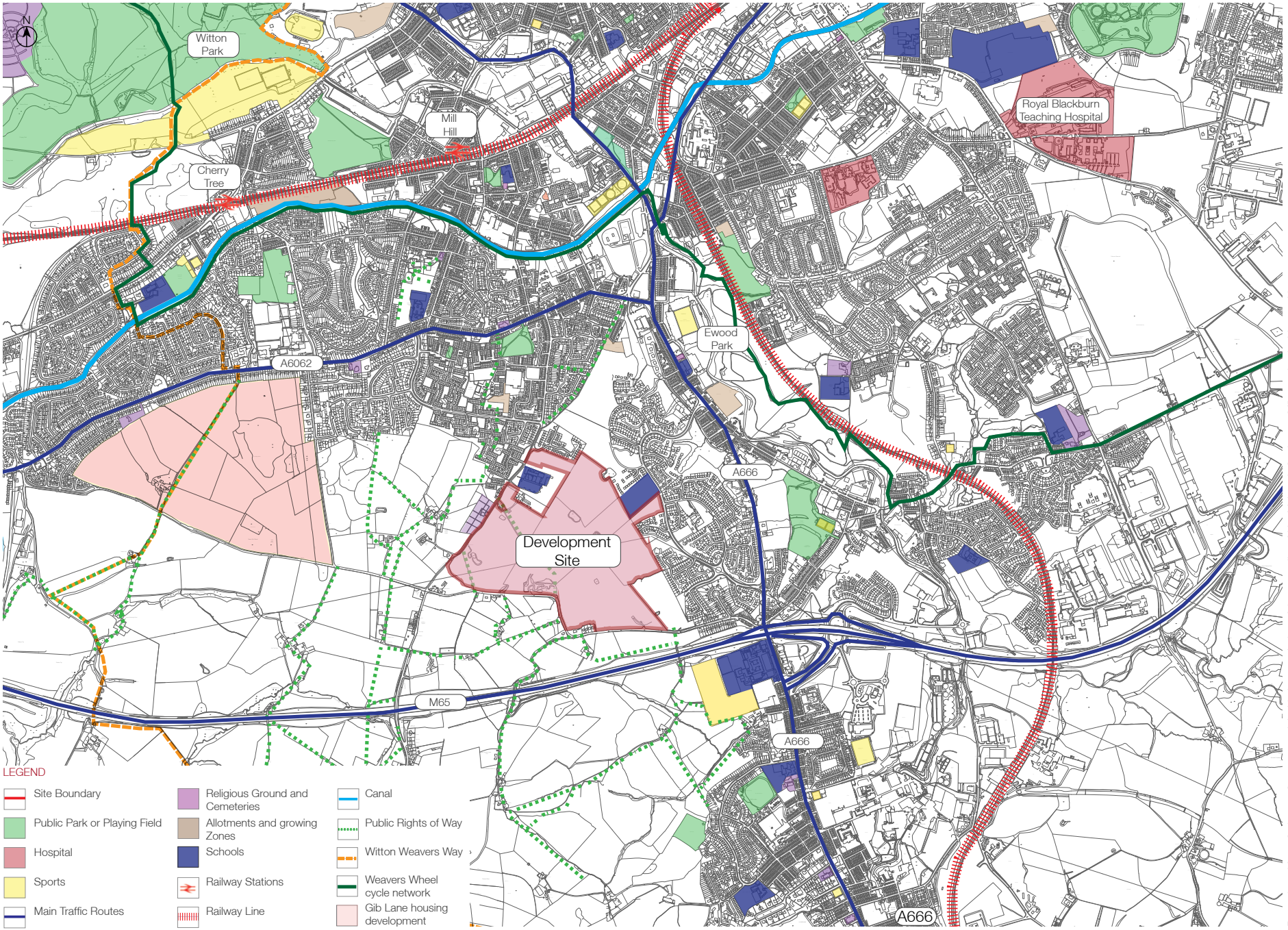


Figure 7 - Site Context

03 Evidence Base

3.10 Character Area Appraisal

Natural England's National Character Areas (NCAs) is an assessment which identifies places that share similar landscape characteristics and which follow natural lines in the landscape rather than administrative boundaries, making them a good framework for decision-making. The site lies within NCA 35 Lancashire Valleys.

Key Characteristics are:

- Field boundaries are regular to the west and more irregular to the east. They are formed by hedges with hedgerow trees and by stone walls and post and wire fences at higher elevations.
- Farmed land is predominantly pasture for grazing livestock, with areas of acid and neutral grassland, flushes and mires.
- Small, often ancient, broadleaved woodlands of oak, alder and sycamore extend along narrow, steep-sided cloughs on the valley sides.
- There are many examples of proto-industrial heritage, including lime hushing, important turnpike and pack-horse routes involved in the early textile trade and rural settlements with handloom weavers' cottages.
- There is evidence of a strong industrial heritage associated with the cotton weaving and textile industries, with many common artefacts such as mill buildings, mill lodges and ponds and links to the Leeds and Liverpool Canal.
- The many towns, including Blackburn, which developed as a result of the Industrial Revolution give the area a strong urban character.
- Robust Victorian architecture of municipal buildings contrasts with the vernacular sandstone grit buildings of the quiet rural settlements on the valley sides.
- Numerous communication routes run along the valley bottoms, including the Leeds and Liverpool Canal, the Preston–Colne railway and the M65 motorway.
- Scattered villages and hamlets on valley sides are comprised of older sandstone grit buildings, often of the longhouse type and isolated rows of stone terraced houses are perched at precarious angles on the steep slopes.
- Species-rich hay meadows are becoming less common throughout the area with the application of modern agricultural techniques.
- Historic farm buildings are still visible today. They either remain in their original isolation or have been subsumed in later urban growth. Linear and dispersed farmstead groups predominate, with some courtyard steadings developed from the late 18th century when arable farming increased. There are field barns for cattle on higher ground.

This general characterisation of the open land at the edge of Blackburn has been supplemented with a more detailed examination of the key features that are local to the site.

New Row Methodist Church on Heys Lane

Existing drystone field boundary walls

03 Evidence Base

3.11 Character Area Appraisal

Bog Height Road

The eastern section of Bog Height Road towards the A666 junction is defined by a double row of terraced cottages. They are sandstone faced with slate roofs, stone lintels, sills and door frames.

Beyond the cottages lies an area dominated semi-detached houses, rendered with red tile roofs. The front curtilages are defined by low level brick walls and piers.

Further west along Bog Height Road the character moves from urban to rural with properties more dispersed and either individual buildings or small clusters. These are generally set back from the highway and in some instances are screened by hedgerows and boundary treatments. Towards the junction with Heys Lane lies a group of stone cottages. These sit on the ridge line and have panoramic views of the countryside and Blackburn itself. These properties are close to the highway with a limited area of front curtilage of around three metres in depth.

View east along Bog Height Road

Cottages 87/88 Bog Height Road

View south from entrance to Bog Height Farm

Cottages near to the junction of Bog Height Road and the A666

03 Evidence Base

3.12 Character Area Appraisal

Heys Lane

Heys Lane is narrower in width than Bog Height Road and is flanked by drystone walls and hedgerows on both sides giving an enclosed feel. Travelling north from the junction with Bog Height Road the route is rural in character.

One property of note is the New Row Methodist Chapel, an early 19th Century purpose-built detached Chapel of two storey appearance. The building is located within a large tree fringed graveyard. The exterior walls are render finished with a roof clad in slate. The building is currently vacant and not in use. It is Grade II listed.

Beyond the Chapel are blocks of traditional stone terraced cottages and individual properties. The northern section of Heys Lane, closest to Livesey Branch Road, is the edge of the main urban area. This area contains a range of properties from social housing to detached properties with a suburban character.

Properties at 240/242 Heys Lane

Heys Lane bounded by drystone walls

View north east of urban fringe

Boundary to New Row Methodist Church graveyard

03 Evidence Base

3.13 Character Area Appraisal

Fernhurst Estate

To the north east of the site lies the Fernhurst Estate. This is also of a suburban character and consists of a mix of house types and styles. The exterior walls are predominantly faced in brick. They have tiled roofs. The estate is generally open plan but with curtilages at key junctions defined by low level brick walls.

View north east down Ashwood Avenue

Junction of Jack Walker Way with Winter Meadows

View north west along Jack Walker Way

View south east along Jack Walker Way

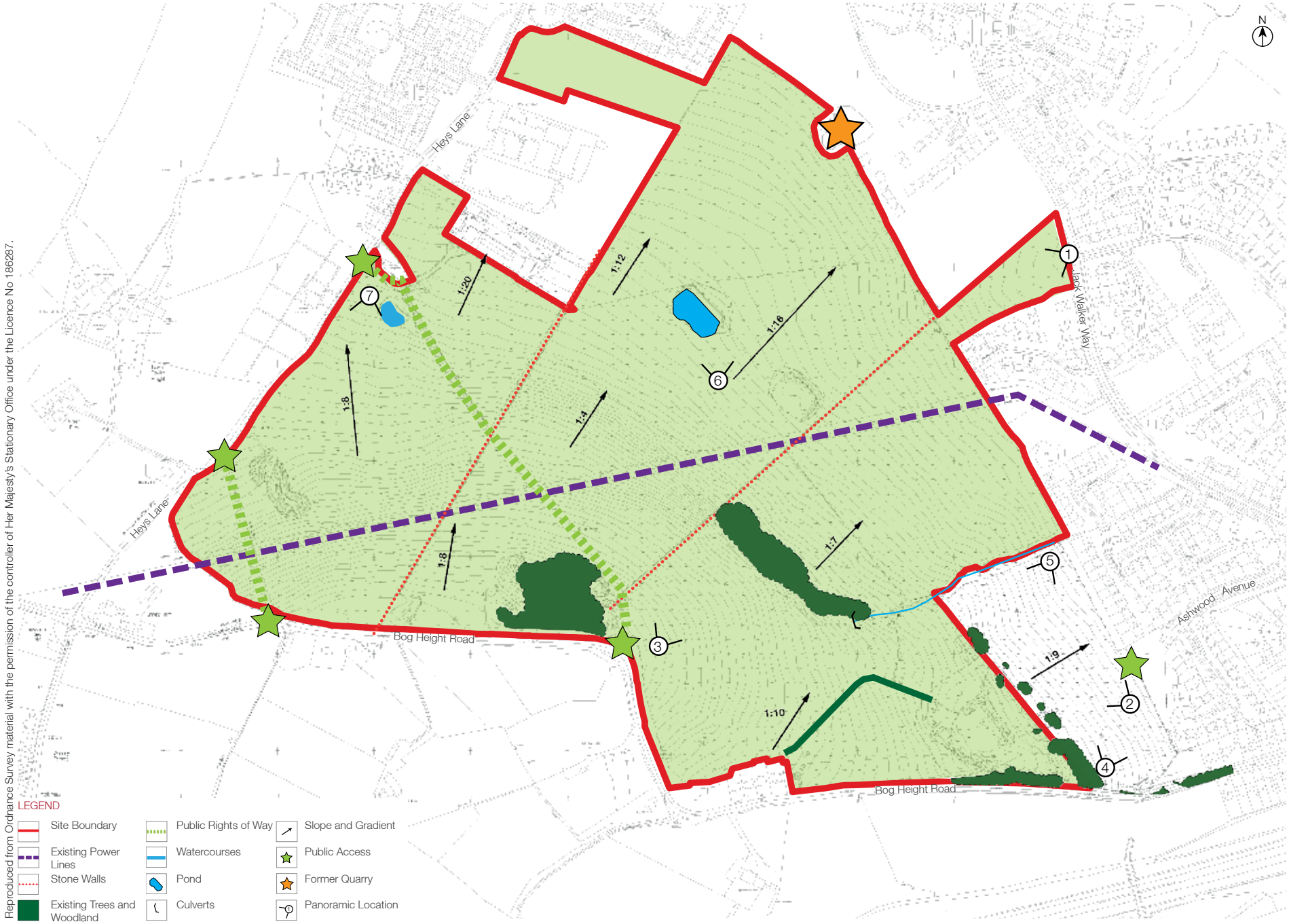


Figure 8 - Site Analysis

04 Vision and Objectives

4.1 Vision

The Bank Hey site will be developed as a high quality, sustainable neighbourhood that is integrated socially and physically with the urban and rural areas that surround it.

New development will have a strong local identity. It will be characterised by pockets of housing set in a generous framework of green spaces. It will be structured around existing landscape features including significant areas of woodland and sections of stone walls.

The comprehensive footpath / cycleway network will encourage walking and cycling as an alternative to travelling by car and provide clear links to existing urban neighbourhoods on one side and to the open countryside on the other.

4.2 Objectives

In order to achieve this vision, the masterplan has been based on the following objectives:

- To create a new sustainable neighbourhood which is integrated with the adjacent parts of the town.
- To deliver a high quality scheme and well-designed houses which have a relationship to the suburban built form at the eastern edge of the site and to the more rural character on other edges of the site.
- To provide a mix of housing in terms of character and size of properties, but with a reasonable proportion of larger family housing.
- To ensure the scheme design and layout responds to the topographical character of the site in a creative way.
- To include streets where there is a distinction between public and private spaces and where innovative design is used to regulate traffic speed.
- To incorporate existing Public Rights of Ways and create a new network of routes for both pedestrians and cyclists.
- To provide a high quality living environment with an attractive network of greenspaces, including managed and improved woodland which provides a biodiversity, landscape and recreational/play function.
- To manage surface water run-off through a coordinated network of sustainable drainage (SuDS) techniques which are integrated into, and enhance, the green infrastructure network.
- To ensure that appropriate infrastructure is provided alongside the new development at the right time and in the right place.

05 Masterplan Framework

5.1 Introduction to Masterplan

The framework for the masterplan is a tailored response to the sloping land across the site. The starting point has been to examine ways to create platforms for new development through a balanced programme of earthworks. Options for the cut and fill of soils have been tested in order to meet a number of key objectives:

- To accommodate new housing development on land with less severe slopes.
- To achieve an approximate balance in the cut and fill of material across the site.
- To create platforms for new development with a cross gradient of around 1:20.
- To avoid significant changes in levels at the periphery of the site where there is an interface with existing housing.

The preferred approach to earthworks results in discrete parcels of development land separated by more steeply sloping zones of greenspace. The development parcels will be linked together by a network of footpaths and cycleways. Some of the parcels are linked by roads where finished site levels can facilitate this.

The greenspace provides a setting and structure for the parcels of development. It occupies almost 40% of the total site area and is formed by zones between and around new housing including a linear greenspace corridor which follows the high voltage power lines bisecting the site.

The greenspace also incorporates areas of existing woodland. The most significant woodland is within and around a former quarry on the southern margin of the site but other groups of trees fall on steeper sections of land not affected by earthworks. Where practical, these will be retained.

The masterplan framework leads to the following mix of land uses:

Land Use	Approximate Area (ha)
Residential (including sustainable drainage)	25.0
Existing Woodland	2.0
Open Space and Green Corridors	12.5
Edge Planting	1.5
Total	**41**

Figure 9 - Masterplan Framework

05 Masterplan Framework

5.2 General Housing Requirements

There are some key design principles that will shape the approach to development within the housing parcels. These principles are set out below. Further detailed guidance is then provided for individual plots in a later section of this masterplan document.

Layout

- It is anticipated that housing layout will be based on an interconnected network of urban or perimeter blocks linked by a network of streets.
- The block layout should ensure that buildings are orientated to face the streets and to front onto areas of open space.
- The clear distinction between public and private spaces is important, particularly along streets where good quality boundary walls and hedges should be used to define the extent of private curtilage areas.
- A high quality edge to the development is vital particularly along the Heys Lane and Bog Height Road corridors.
- Particular attention should be given to the transition from the new development to the surrounding countryside. The character,orientation and detailing of the housing at the point of transition needs to be carefully conceived.

Density

- It is expected that the density of housing development will vary across the site as a whole.
- Higher density development should be concentrated on the plots towards the eastern edge of the site next to the existing suburban housing (30 – 40 dwellings per hectare (dph) across the net developable area).
- There is an opportunity for a lower density of development where housing is next to the open countryside to provide an appropriate transition from urban to rural. The maximum density should be 30dph (of net developable area).

Mix

- Policy CS7 of the Core Strategy looks to broaden the choice of housing and to meet the need in particular for high quality family housing.
- It is expected that the majority of the new housing will be family housing in character and scale but there are opportunities to meet the needs of other households.
- There is an affordable housing requirement of 20% (Policy CS8 of the Core Strategy). The level of affordable housing will be subject to an appraisal of viability. If it is viable to contribute to meeting affordable housing needs then this will be in the form of a commuted sum to be used by the Council to deliver affordable housing elsewhere in the Borough.

06 Transport Framework Vision and Objectives

6.1 Road Design Principles

The site has the potential to be linked to several roads:

- Bog Height Road
- Heys Lane
- Jack Walker Way
- Ashwood Avenue

Other significant roads in close proximity to the site include:

- The M65 Motorway
- A666 Bolton / Blackburn Road to the east
- A6062 Livesey Branch Road to the north

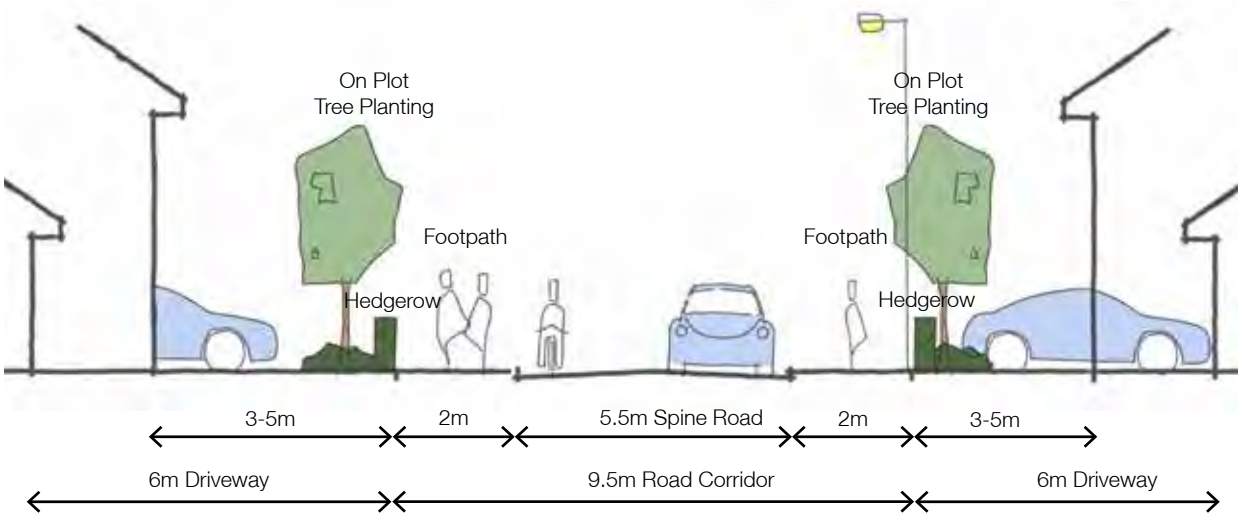
An overview of the proposed and existing road network is provided in Figure 10.

The masterplan is based on key links to each of the surrounding roads. This has the effect of distributing traffic generated by the development around the existing road network rather than concentrating traffic at one or two primary points of access. Road links are proposed onto Heys Lane, Bog Height Road, Jack Walker Way and Ashwood Avenue. Significantly, a new road link is planned between Bog Height Road and Ashwood Avenue.

The approach to access with multiple connections to existing roads and the fact that it is not possible to form inter-connections between all the parcels of housing means that there is no one primary road running through the development as a whole. As a consequence, roads through the housing areas can be a regular matrix and at a modest scale with a maximum width of 5.5 metres and 2 metre footpaths.

Occasional buildings located close to the back of footpaths should be used to create pinch points. This should send the message to motorists that speed should be reduced.

Where traffic volumes are more limited the opportunity should be taken for a more informal approach to road design. Shared surface urban lanes, with a maximum width of 4.8 metres, should be incorporated into the layout of the development. These should be bounded by low hedges and should be surfaced in a way that makes them distinct, perhaps using contrasting colours of tarmac. This approach is particularly encouraged where there is an interface with open countryside and a transition between rural and urban is needed.



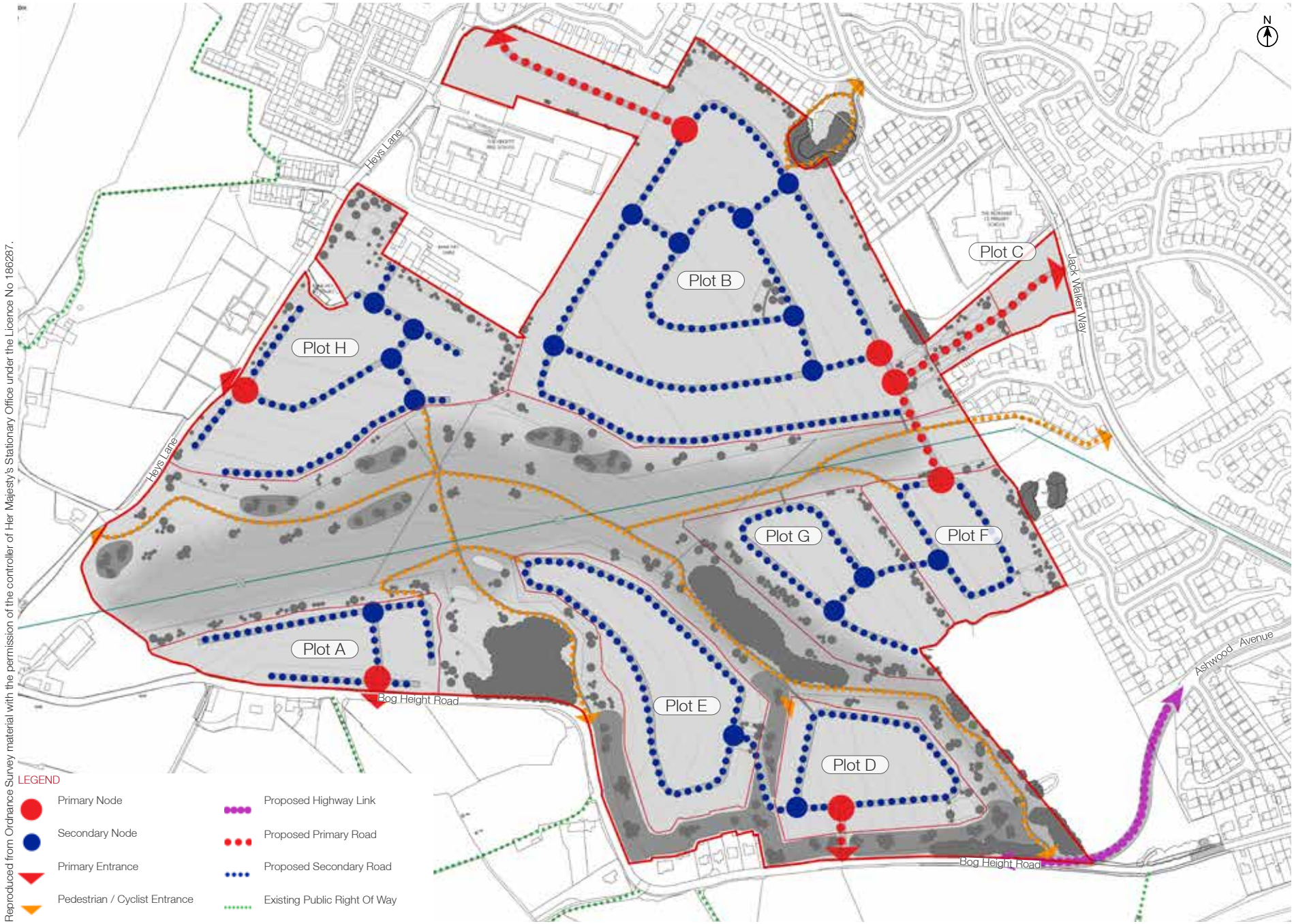
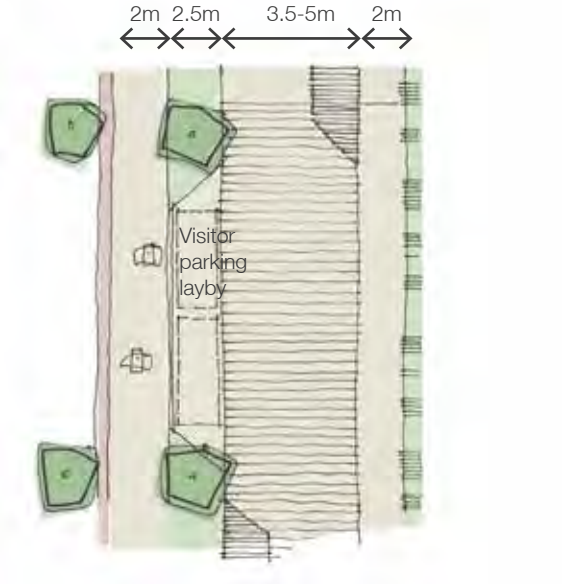
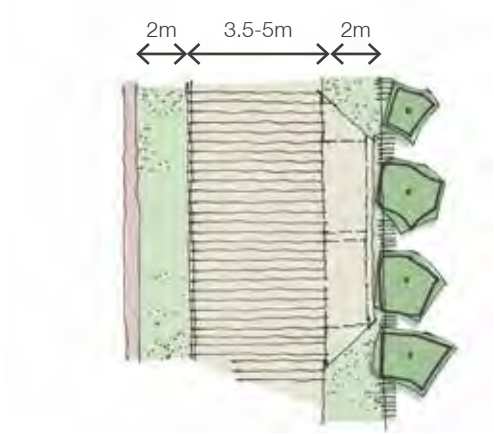


Figure 10 - Movement Framework

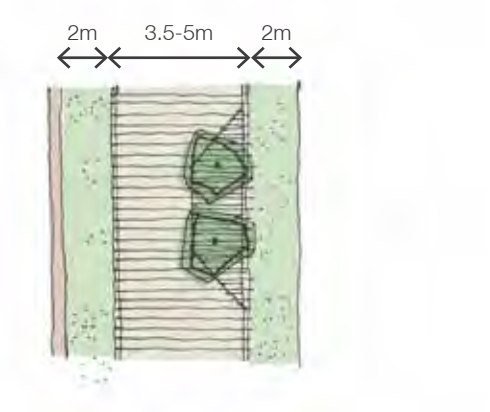
Street with footways



Street with visitor parking



Urban lane with visitor parking (shared surface)



Urban lane with verge edge (shared surface)

Urban lanes and shared surface roads

- Shared surface roads within residential developments with contrasting colours of tarmac defining road surfaces and grassed service strips either side incorporating visitor parking spaces.
- Areas of roads and footpaths should reflect Manual for Streets standards with varying surface finishes and textures to delineate pedestrian and car parking areas.
- Road widths should range from 4.1m for urban lane links to 5.5m for streets dependent upon location and function.

Figure 11 - Typical Roadways and Footpath Types

06 Transport Framework Vision and Objectives

6.2 Walking and Cycling

The footpath and cycle network across the site will function to provide essential links between individual housing parcels and will form connections with the adjacent neighbourhoods and public routes through the countryside. Footpaths and cycleways will run through the greenspace and, in turn, will be integrated with surfaced paths through the housing development.

It is not possible to link together all of the housing parcels through the network of roads within the site but it is important for pedestrians and cyclists to move easily around the new development as a whole. As a consequence, cycle and footpath routes will need to be designed to traverse the slopes between development parcels. Good quality, bound surfaces will be required.

6.3 Travel Plans

Each parcel of new housing should be supported by a Travel Plan which sets out the measures to be employed to encourage the use of sustainable modes of transport, particularly walking and cycling. There is an overarching Travel Plan for the site which should act as a point of reference.

The site is likely to be developed in stages and by a number of developers. As such, a mechanism will need to be put in place to ensure that individual Travel Plans are integrated. There could be a need, for instance, for a single Travel Plan Co-ordinator who will take on the role of promoting and facilitating sustainable transport across the site as a whole.

6.4 Parking

It is imperative that car parking is considered as an integral part of the design process. It needs to be carefully conceived so that it does not dominate the visual impression of any street. With this in mind, there are several options for the successful incorporation of car parking into the layout of the housing development.

These include:

- Parking and garaging to the side of houses in preference to parking in the front curtilage zone.
- Provision for on-street parking, possibly using occasional visitor parking bays at appropriate locations.

The level of car parking should comply with the Council's adopted standards and should be provided through a well considered combination of on plot, off plot and on street solutions.

07 Green Infrastructure

7.1 Green Infrastructure Overview

Green infrastructure is a strong element in the masterplan. It will provide an overarching framework for new development. The green infrastructure provides separation, often across more steeply sloping land, between housing parcels and accommodates a network of footpaths and cycleways. It is a valuable amenity for the community.

There are a number of purposes for the green infrastructure to serve:

- It is a visual amenity which provides a high quality setting for the new housing development.
- It will meet recreational needs as an area of accessible open land penetrated by footpaths and cycleways.
- It will provide an opportunity to retain and enhance habitats for wildlife and to create wildlife corridors.
- It will be the location for dedicated areas for children's play, including equipped areas for play, perhaps in the form of a linear 'adventure' trail.
- It will accommodate the sustainable drainage infrastructure.
- It will assist in making a transition from the urban extension to the open countryside.

7.2 Informal Green Space

The topography of the site, existing woodland and the overhead power line have been used to inform the green space design. The masterplan includes a central corridor of open space which bisects the site from west to east. This follows the alignment of the overhead power lines. The width of this corridor takes into account advice and guidance about development in proximity to overhead power lines (Appendix 1). There are other zones of greenspace which link to the central corridor and include existing blocks of woodland and generally steeper ground. These run through to the southern boundary of the site.

The design of the informal greenspace should be progressed to meet its multiple functions. Design will need to be comprehensive and co-ordinated but will also need to show that greenspace infrastructure can be delivered in stages as the development is progressed.

It is recommended that the most appropriate approach to meeting the need for children's play is in the form of centralised, high quality equipped facilities. Two NEAPs (Neighbourhood Equipped Areas of Play) are proposed in the central greenspace corridor. These can be separate from housing but still benefit from a degree of overlooking and surveillance. They will be maintained by the Management Company which is to be set up to maintain those parts of the strategic greenspace that will not be used for the grazing of animals.

Figure 12 - Green Infrastructure - Open Space and Drainage

07 Green Infrastructure

7.3 Landscape Design

A Landscape Strategy should be submitted with all planning applications. It should achieve the following objectives:

- Retained stone boundary walls and hedges should be supplemented by new lengths of stone walls and hedges at the edge of development plots and through the open space.
- The sustainable drainage strategy for the site should, where possible, use existing watercourses and drainage ditches.
- The incorporation of Public Rights of Way into the landscape structure of the development.
- Existing trees and woodland of value should be retained as important landscape features and should inform the layout of new development.
- New structural and edge planting will be required throughout the development.
- Key views into and out of the site should be taken into account in the design of the development.

07 Green Infrastructure

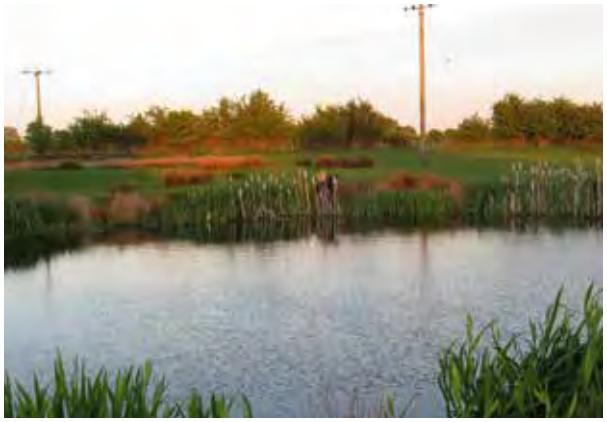
7.4 Biodiversity

Development should establish and preserve the functional ecological networks and create new green infrastructure.

Options to further enhance the biodiversity of the site include the creation of species-rich grassland, wetland areas, open watercourses and the installation of bird, bat and hedgehog boxes.

Key ecological considerations associated with future development at the site include:

- Ponds within the site offer potential breeding habitats for amphibians, including great crested newt.
- The woodlands, hedgerows, scrub and drystone walls provide terrestrial habitat for amphibians.
- A number of trees within the site offer potential roosting habitat for bats.
- The woodlands, hedgerows, scrub, ponds and watercourses on site provide foraging and commuting habitat for bats.
- The woodlands, hedgerows, scrub, drystone walls and trees provide potential nesting habitat for birds.
- The marshy grassland and pasture provide potential nesting habitat for ground nesting birds.
- The woodlands, hedgerows, scrub, grassland and drystone walls provide potential habitat for slow worms.



08 Design Framework

8.1 General Design Principles

The character of the new development will be a reflection of the location of the site on the edge of the Pennine countryside and will be influenced by the interplay between parcels of housing and the broad zones of open space.

There are several overarching design objectives which, in combination, will assist in creating a distinct character of development. These objectives are set out first before guidance on the design of development in individual character areas.

Overall Approach

The masterplan shows a comprehensive approach to the development of the site but it is envisaged that the finer grain of design detail will vary across individual housing parcels or character areas. Site wide principles that will be common to the design of housing on all parcels include:

- Each development parcel has a primary point of access. This needs to be celebrated through the design of attractive and bespoke gateways. These should combine buildings with hard and soft landscape to create an inviting and high quality entrance to individual development parcels.
- The urban or perimeter block principle should be used so as to ensure that streets, public spaces and open spaces are directly overlooked by housing and that there is a connected network of routes. Cul-de-sacs should be avoided unless they are associated with informal private drives serving a small number of houses.
- Incidental open space in development parcels need to be incorporated, providing interest and variety in the layout of housing. These open spaces need to have a purpose. They can meet the needs of play for small children near to where they live, they can be gathering or informal seating areas for local people or they can be used as focal points in the development and aid navigation through the residential streets.
- The outside edges of the development along Heys Lane and Bog Height Road have the greatest potential to establish the character of the development. The approach to building and landscape design, including robust boundaries, and the quality of materials used along these edges should be given particular attention.

8.2 Character Areas

Five character areas are proposed. These take into account the existing landscape, ecological and topographical characteristics of the site. These character areas are identified in Figure 13. The development at each character area will be a reflection of its location within the site. There is a broad division between housing parcels at the edge of the existing built up area (character areas 2,3 and 4) and those that will be at the interface with open countryside (character area 1 and 5).

Figure 13 - Character Areas

08 Design Framework

8.1 Character Area 1

This area is at an elevated position and falls at the interface with open countryside. To the south is Bog Height Road which is a rural road bounded by a stone walls and hedgerows. This area will have a rural character with properties set back but looking onto Bog Height Road and onto the greenspace network to create an informal edge to development.

Key characteristics are:

Layout and density

- Lower density of between 20 – 30 dwellings per hectare (dph).
- Informal arrangement of buildings which resonate with the form and character of the clusters of properties in the surrounding countryside.
- Footpath links into the central green corridor.

Land use

- Housing and areas of associated landscape.
- Sustainable drainage included within the central green corridor.

Scale and form

- Detached houses, or small clusters of buildings and the opportunity for innovative designs.
- Properties will either front onto Bog Height Road or overlook the green corridor.

Streets, public open space and landscape

- The adjacent central green corridor will form a distinct setting for this development. Pedestrian routes through the open space need to connect with paths in the development.
- Roads to follow contours of the land.
- Streets with narrow carriageways, using shared surfaces where appropriate.
- On plot parking arranged so that cars do not dominate the street scene.
- Views from the plot are to be taken into account.
- Provide landmark buildings of interest at the gateway entrance to the plot.
- Landscape to provide structure and enclosure to spaces.
- Existing stone walls integrated into the development to form feature boundaries to streets or landscaped areas.
- Use of hedgerows and landscape features to form key structural elements.
- Investigate the potential to take direct access to individual plots from Bog Height Road.

Boundary treatments and enclosure

- Buildings to have a small and varied setback from the street.
- Routes and key junctions to be defined with drystone boundary walls.
- Gable ends of dual fronted properties can be used to define the edge of the street and create variety and interest.
- Boundaries at the edge of the central green space to be reconstituted stone walls or hedgerows.

Detail of built form

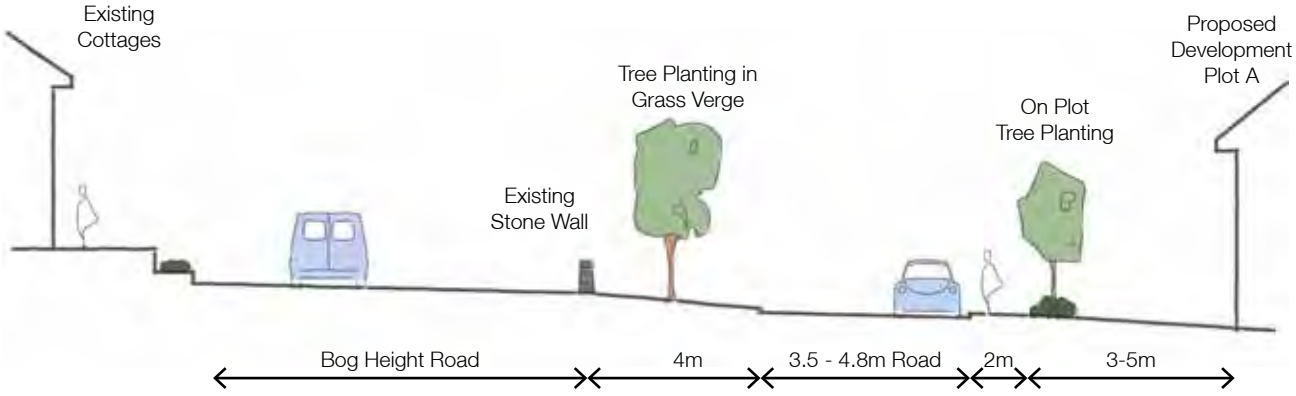
- Irregular plots arranged to work with the topography.
- Orientation of buildings to front streets and open spaces, to maximise views or work with the topography.
- Buildings to be predominantly stone faced.
- Garages and parking to be set back from front building lines, preferably between buildings.

Illustrative plan of interface with Bog Height Road

Key Plan

Use of natural stone

Natural stone materials used as boundary treatments



Illustrative section of interface with Bog Height Road

Figure 14 - Character Area 1

08 Design Framework

8.2 Character Area 2

This area is the largest of the development parcels. It will have a suburban character to resonate with the late 20th Century housing along Jack Walker Way. The area will include a central green which will form a hub. There is an opportunity for a tighter urban grain around the green and a more open informal character at the southern edge of the parcel overlooking the green corridor. There will need to be a sense of arrival into the new neighbourhood with swales, landscape and buildings forming the gateway from Jack Walker Way. Buffers are to be created adjacent to the rear boundaries of the existing properties on Heyworth Avenue, Clayton Way and The Greenwood.

Key characteristics are:

Layout and density

- Medium density (30-40dph) but with the opportunity for more intense development around the central green.
- Less dense and more open grain fronting the green corridor along the southern boundary of the area.
- Footpath links into the central green corridor.

Land use

- Residential and a central open green.
- Area of green space separating Plots B and C to accommodate sustainable drainage swales and attenuation basins.

Scale and form

- The main green space will be bound by frontage buildings of two storeys with opportunities for higher buildings on corners to provide variety and interest.
- Housing mix of detached, semi-detached and clusters of terraced housing.
- Minimum interface distance with properties on Heyworth Avenue, Clayton Way and The Greenwood in accordance with the Council's separation standards with the intervening space planted to reduce overlooking between new and existing properties.

Streets, spaces and landscape

- Main access road from Jack Walker Way to have a distinct character.
- Emphasis at arrival points through a distinct layout incorporating gateway landscape features.
- Exploit views across the green space.
- Central green to have open character laid in grass, with some feature planting.
- Drainage ponds and swales to have informal landscape character.

Boundary treatments and enclosure

- Buildings to have varied setbacks from the street.
- In order to form attractive urban streets there is a need for boundaries to the front curtilage of individual houses which distinguish private from public space.
- Boundaries alongside the central green corridor to be robust estate style fencing.

Detail of built form

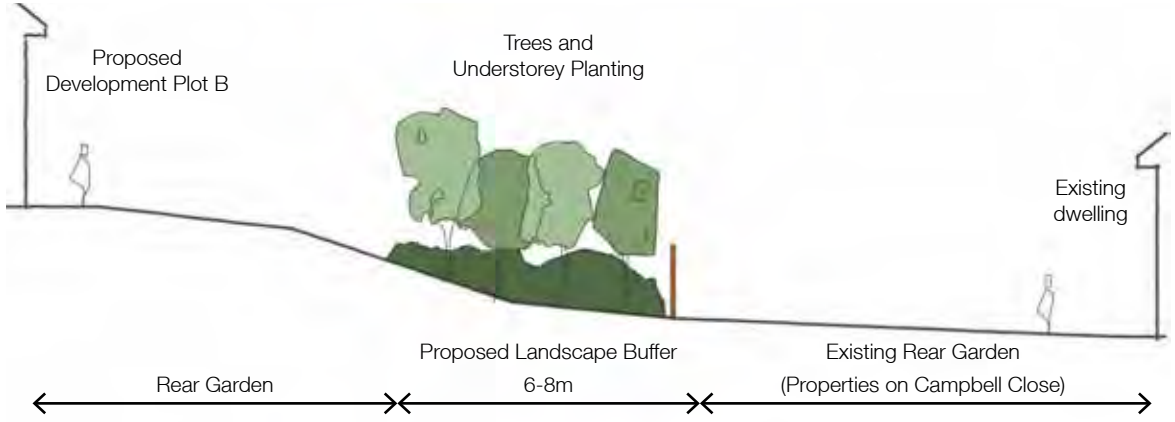
- Frontage to village green to have irregular plot widths with buildings forming a distinctive edge with occasional setbacks for variety and interest.
- Options for building clusters such as terraced dwellings to form distinctive groups.
- Building designs to have considered balance of solid to void, with vertical rhythm of window openings. Larger glazed features can be used to exploit views, provide interest and maximise solar gain.
- Materials to be predominantly red brick with accents of stone and render.

Illustrative plan of housing overlooking central green space

Key Plan

Housing style and facing material

Corner plots to have dual aspect houses



Illustrative section of rear boundary treatment with properties on Campbell Close

Figure 15 - Character Area 2

08 Design Framework

8.3 Character Area 3

This area lies adjacent to the southern boundary along Bog Height Road. It is at a higher elevation and offers panoramic views of the surrounding countryside. To the east and west of the parcel are retained woodland. The outer edge of development in this area in particular will have a predominantly informal rural character with occasional landmark statements at key focal points.

Key characteristics are:

Layout and density

- Density of 25 – 35 dph.
- Informal organic character at the outer edge where there is an interface with open countryside.
- Footpath links into the green corridors.

Land use

- Housing with areas of open space including drainage ponds and swales.

Scale and Form

- Detached or semi-detached houses of two storeys.
- Opportunity for housing with varied footprints.
- A transitional area of landscape which connects the new development to the countryside margin of Bog Height Road.

Street, public open space and landscape

- Creation of a landscape buffer between the development and Bog Height Road.
- Roads to follow contours.
- Incidental spaces at points where panoramic views are available.
- Creation of informal green spaces which link into the green network.
- Existing stone walls along Bog Height Road to be integrated into the development.
- Use of hedgerows and landscape features to form key structural elements.
- Mainly on plot parking .
- Provide landmark buildings of interest at key points.
- Emphasise the point of arrival at the entrance from Bog Height Road with a distinct combination of buildings and landscape features.

Boundary treatments and enclosure

- Buildings to have varied setbacks from the street.
- In order to form attractive urban streets there is a need for boundaries to the front curtilage of individual houses which distinguish private from public space.
- Boundaries alongside the central green corridor to be hedges or reconstituted stone.

Detail of built form

- Buildings which will front, and be visible from, Bog Height Road to reflect the rural Pennine vernacular with stone facing but with an opportunity for contemporary features such as glazed panels to maximise views.
- Dual fronted housing with high quality boundaries and landscape treatment of key junctions.
- Garaging to be discretely located and either designed as integral to buildings or located to form part of a boundary edge.

Illustrative plan of entrance access from Bog Height Road

Key Plan

Dual aspect corner plots

Use of natural stone

Illustrative section of interface with green corridor

Figure 16 - Character Area 3

08 Design Framework

8.4 Character Area 4

This area lies on lower ground in the south eastern corner of the site. It will be accessible from a primary link road from Plots B and C. The area will have a suburban character which takes design influences from existing housing along Jack Walker Way. Buffers are to be created adjacent to the rear boundaries of the existing properties on Heatherleigh Gardens.

Key characteristics are:

Layout and density

- Medium (30-40dph) density comprising residential buildings.
- Less dense and more open grain fronting the green corridors along the northern and western boundaries of the area.
- Footpath links into the central green corridor to the north of the parcel.
- Housing to front the greenspace along the western and northern boundaries.

Land use

- Housing with areas of open space including drainage ponds and swales.
- Graded slope accommodating a landscape buffer between the two plots.

Scale and Form

- Housing mix of detached and semi- detached units with clusters of terraced housing to form strong building enclosures.
- Minimum interface distance with properties on Heatherleigh Gardens of 27m and the intervening space subject to a form of landscape treatment that will reduce the potential for overlooking between new and existing properties.

Street, public open space and landscape

- Footpath links to the structural greenspace areas
- Emphasise the arrival point at the entrance with a distinct arrangement of buildings and landscape.
- Trees and structural landscape to break up the street scene and incidental open spaces for purposes such as children's play.
- SuDS and swales to have informal landscape treatment with meandering footpaths and feature planting.

Boundary treatments and enclosure

- Buildings to have varied setbacks from the street.
- In order to form attractive urban streets there is a need for boundaries to the front curtilage of individual houses which distinguish private from public space.
- Boundaries alongside the central green corridor to be hedges or reconstituted stone.

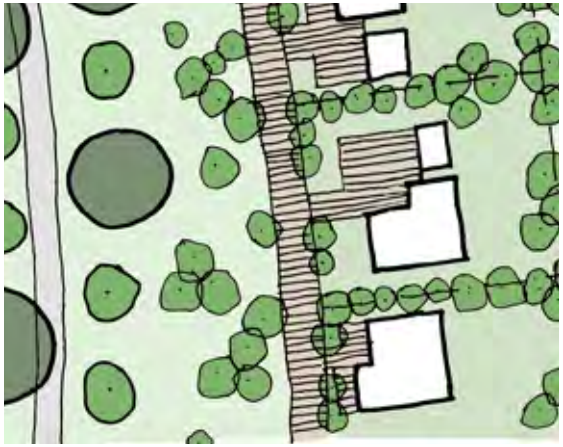
Detail of built form

- Options for building clusters such as terraced dwellings to form distinctive groups of buildings.
- Building designs to have considered balance of solid to void, with vertical rhythm of window openings taking references from Pennine vernacular architecture. Larger glazed features can be used to exploit views, provide interest and maximise solar gain.

Illustrative plan of boundary between Plots G & F

Key Plan

Houses to over look the green corridor



Illustrative plan of interface with green corridor

Illustrative section of rear boundary treatment with properties on Heatherleigh Gardens

Figure 17 - Character Area 4

08 Design Framework

8.5 Character Area 5

This area lies adjacent to the north western boundary along Heys Lane. The outer edge of development in this area in particular will have a informal rural character with occasional landmark statements at key focal points.

Key characteristics are:

Layout and density
- Medium to low density (25-35dph).
- Medium to large plots.
- Footpath links into the central green corridor.
- High quality and distinct frontage to Heys Lane.

Land use
- Housing with incidental open spaces and green corridor.

Scale and Form
- Two storey detached and semi -detached houses in generous plots.
- Opportunity for bespoke housing design to some plots.
- Properties will either front onto Heys Lane or present a principal elevation to the greenspace along the southern boundary of the plot.

Street, public open space and landscape
- Housing fronting vehicular routes and the central green core.
- Street edges defined by boundary walls, hedgerows and trees.
- Landscape buffer to eastern and northern edge includes SuDS drainage and an opportunity for recreational routes with meandering footpaths penetrating the landscape.
- Mainly on plot parking concealed to the side of dwellings.
- Minor streets to have shared surfaces of block paving or contrasting colours of tarmac.
- Provide landmark buildings of interest at key junctions, perhaps using dual aspect housing.

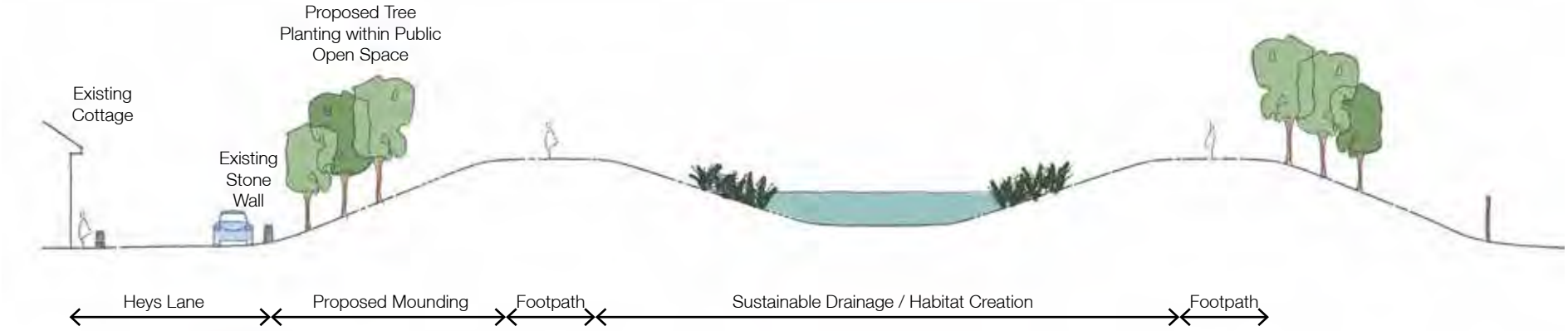
Boundary treatments and enclosure
- Buildings to have varied setbacks from the street.
- The entrance gateway and key junctions to be defined with drystone boundary walls and railings.
- Gable ends of properties on dual fronted houses can be used to define the edge of the street and create variety and interest.
- Boundaries overlooking the central green corridor to be hedgerows or reconstituted stone.

Detail of built form
- Areas of regular plot widths broken up with larger plots and dwellings forming key nodes and features.
- Buildings set back from street edge with landscaped front areas and paved drives.
- Garages to side of dwellings and parking arranged so as to not dominate the street.
- Orientation of buildings to front streets and spaces, to maximise views and work with the topography.
- Materials to be predominantly red brick with accents of stone and render.

Illustrative plan of interface with green corridor

Key Plan

Estate fencing used adjacent to the green corridor



Illustrative section at interface with Heys Lane and greenspace

Figure 18 - Character Area 5

09 Delivery Strategy

9.1 Planning Application Requirements

The development will be brought forward in phases over a time-frame which is up to 10 years. As a consequence, it is vital that the masterplan exerts a strong influence over the approach to design in individual character areas and on the delivery of infrastructure to support developments.

It is anticipated that separate planning applications for individual phases or character areas will be submitted although there is the option of a two stage approach to planning with an outline planning permission to provide an overarching statutory approval for new development followed by a series of reserved matters applications. If an outline planning application is submitted then there will be an intermediate stage which requires the submission and approval of a Design Code. This will be secured by planning condition. Whichever planning route is adopted, Blackburn with Darwen Council would encourage pre-application discussion with interested parties.

All planning applications will need to be supported by essential information to show the design detail but the Design and Access Statement will assume a particularly important role. It should explain the rationale for all design decisions and demonstrate how the proposed development aligns with all aspects of the masterplan. Other key documents will include a Flood Risk Assessment and Drainage Strategy, a Transportation Assessment, a Land Quality and Remediation Statement, Ecological Surveys, a Landscape Strategy and an Air Quality Assessment.

If planning applications are brought forward for individual plots or phases then they will need to be accompanied by a context plan and statement to explain how the development proposed relates to the other parts of the site and the contributions the development will make to infrastructure. The contributions will be in the form of physical works and financial contributions and could include road infrastructure, off-site road improvements, drainage infrastructure, open space and footpaths, play areas and contributions to the provision of primary education. The context plan and statement will also need to demonstrate how the impacts and implications on planning matters such as transport and traffic, drainage and strategic open space provision relate to projected impacts and implications across the site as a whole.

Under the provisions of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, the development could require Environmental Impact Assessment (EIA) and an Environmental Statement. It is recommended that a Screening Opinion is submitted to the Council in advance of submitting planning applications to establish if EIA is required or not.

9.2 Phasing of Development and Infrastructure Delivery

The masterplan has been based around the ability to bring development forward in phases. It shows four key phases. These coincide with the character areas and take account of different land ownerships.

It is essential that there is a clear understanding of the infrastructure required for each phase of the development. Each phase is served by a separate point of access to the existing road network but there will be a need to link phases of development to other road improvement works that are beyond the phase boundary and of more strategic significance. The same applies to the drainage network and to the areas of structural greenspace. This is why the planning application requirements for plots or phases will need to be presented in the context of the whole development.

With this in mind, the phasing plan shows the broad extent of the phase boundary, including those parts of the strategic greenspace and the network of pedestrian routes associated with each phase.

Development and new infrastructure will be provided progressively over time but there will be trigger points which require the completion of aspects of strategic infrastructure such as off-site road improvements. The schedule opposite gives an indication of the infrastructure requirements for each phase of development. There is a companion Infrastructure Delivery Plan which provides more detail.

09 Delivery Strategy

9.2 Phasing of Development and Infrastructure Delivery

Phase	Key Infrastructure Requirement	Delivery
One	Access to Jack Walker Way and Heys Lane	Developer
	Interim improvements Jack Walker Way (S) / A666 Bolton Road junction	Developer (S278)
	Improvements at the junction of Heys Lane and Livesey Branch Road	Developer (S278)
	Strategic greenspace and associated footpaths (part) and the construction of a Neighbourhood Equipped Area for Play (NEAP)	Developer
	Surface water drainage network (part)	Developer
	Utilities connections and if needed enhancements	Developer (utilities provider)
	Bog Height Road/Ashwood Avenue link road	BwD Council (developer contribution)
	Improvements to the junction of Jack Walker Way (S) / A666	BwD Council (developer contribution)
Two	Access from Heys Lane	Developer (S278)
	Strategic greenspace and associated footpaths (part) and the construction of a Neighbourhood Equipped Area for Play (NEAP)	Developer
	Jack Walker Way (N) / A666 Bolton Road junction	Developer (S278)
	Surface water drainage network (part)	Developer
	Utilities connections and if needed enhancements	Developer (utilities provider)
	Bog Height Road/Ashwood Avenue link road	BwD Council (developer contribution)
	Improvements to the junction of Jack Walker Way (S) / A666	BwD Council (developer contribution)
	Improvements at Heys Lane / Brokenstone Road junction	Developer (S278)
Three	Bog Height Road/Ashwood Avenue link road	BwD Council (developer contribution)
	Improvements to the junction of Jack Walker Way (S) / A666	BwD Council (developer contribution)
	Access to Bog Height Road	Developer (S278)
	Strategic greenspace and associated footpaths (part)	Developer
	Surface water drainage network (part)	Developer
	Utilities connections and if needed enhancements	Developer (utilities provider)
Four	Access to Bog Height Road	Developer (S278)
	Strategic greenspace and associated footpaths (part)	Developer
	Surface water drainage network (part)	Developer
	Utilities connections and if needed enhancements	Developer (utilities provider)
	Improvements to the junction of Jack Walker Way (S) / A666	BwD Council (developer contribution)

Note:

(1) Where infrastructure delivery is to be undertaken by BwD Council there is anticipated to be a contribution from the developer through a planning obligation (S106 Agreement)

(2) For each phase it is also anticipated that there will be a contribution towards the provision of additional primary education places. This will be secured through a planning obligation (S106 Agreement)

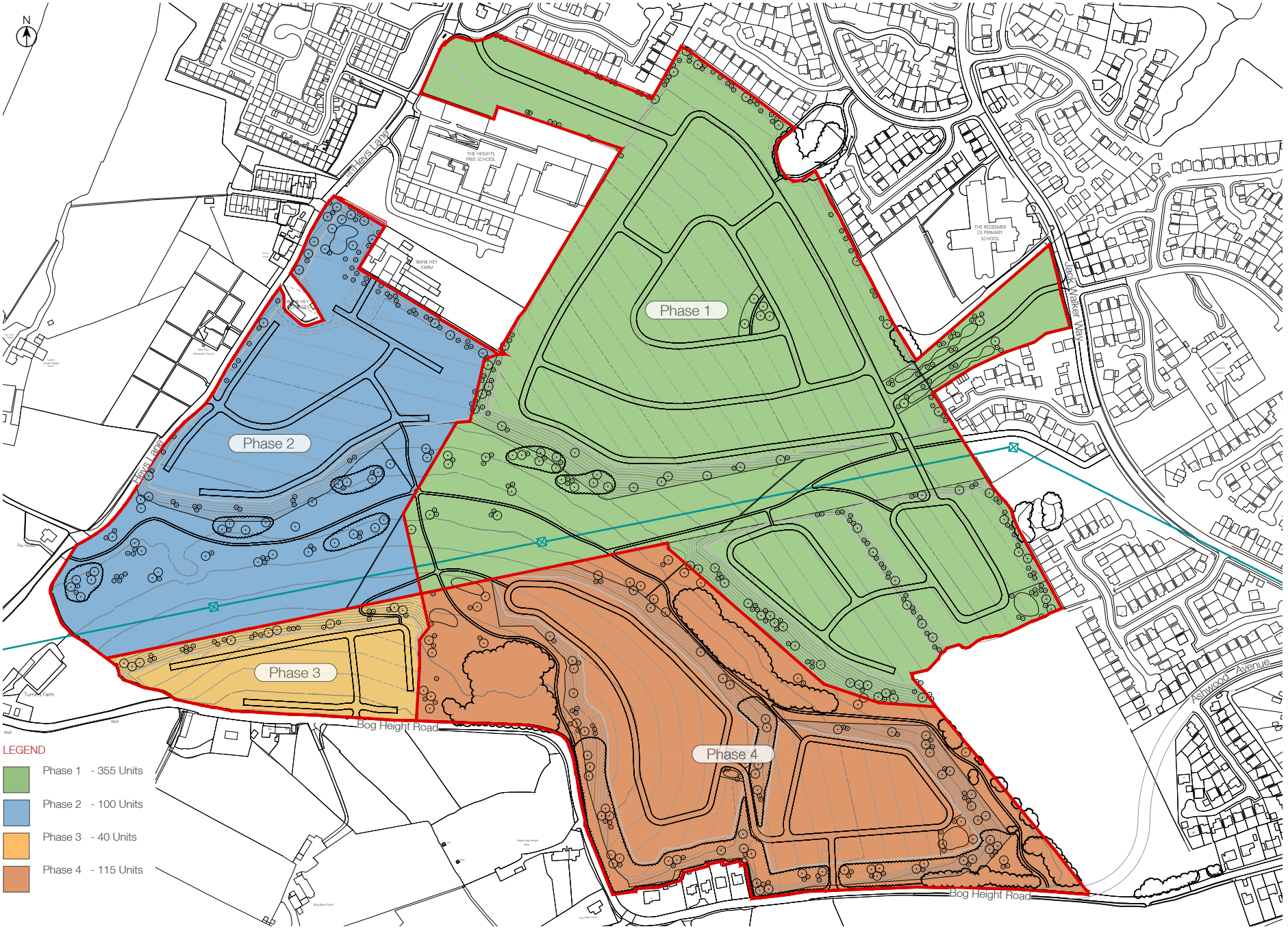


Figure 19 - Phasing Plan

09 Delivery Strategy

9.3 Housing Trajectory

The rate of delivery of housing will be subject to a wide range of factors and so, at this stage, the housing trajectory for the site can only be seen as indicative. Nevertheless, it is useful to provide an estimate of projected house completions over a 10 year period and the number of house units to be delivered in each phase and in each year.

Plot	Land Area (acre)	Land Areas (ha)	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
PHASE ONE	35.9	14.5	355	30	60	60	60	60	60	25			
PHASE TWO	10.3	4.2	100			15	25	25	25	10			
PHASE THREE	4.1	1.7	40							20	20		
PHASE FOUR	11.6	4.7	115							25	30	30	30
Total	**61.9**	**25.1**	**610**										
Estimate of units sold per year				**30**	**60**	**75**	**85**	**85**	**85**	**80**	**50**	**30**	**30**
Number of house builders on site				1	2	3	3	3	3	3	2	1	1

09 Delivery Strategy

9.4 Developer Contributions, Viability and Planning Obligation

There is essential infrastructure to support the new housing in the form of off-site highway improvements and additional primary education places. Contributions from developers to meeting these essential infrastructure requirements will be secured through planning obligations (S106 Agreement). The essential infrastructure is identified in Part 9.2 of this document. Other planning requirements such as the delivery of affordable housing will be subject to viability appraisal. In accordance with the advice in the NPPF the viability appraisal will need to account for the costs of all requirements associated with the development, such as affordable housing requirements or contributions to improve services such as education as well as infrastructure improvements and the normal cost of development together with the need to provide a competitive return to a willing land owner and a willing developer.

Subject to any viability appraisal, it is anticipated that developers will make contributions to the Council through a Section 106 Agreement(s). This is intended to reasonably mitigate the impacts arising from the development. Early discussion with the Council about the Section 106 Agreement at the stage of preparing planning applications is important. The discussion, in particular, will need to focus on the statutory tests for Section 106 obligations set out in the Planning Act of 2008.

The Section 106 Agreement could also be used to regulate and control two other important requirements of the development:

1. The need to establish a Management Company to take on responsibility for the maintenance of the strategic greenspace (including paths and equipped areas for play).
2. The need for an effective and co-ordinated Travel Plan to promote the use of sustainable modes of travel.

APPENDIX 1 - Development in proximity to overhead power lines

APPENDIX 1

02

APPENDIX 1

03

Purpose and scope

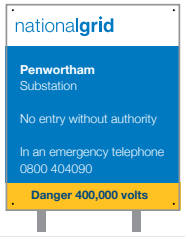
The purpose of this document is to give guidance and information to third parties who are proposing, scheduling or designing developments close to National Grid Electricity Transmission assets.

The scope of the report covers information on basic safety and the location of our assets – and also highlights key issues around particular types of development and risk areas.

In the case of electrical assets, National Grid does not authorise or agree safe systems of work with developers and contractors. However, we will advise on issues such as electrical safety clearances and the location of towers and cables. We also work with developers to minimise the impact of any National Grid assets that are nearby.

How to identify specific National Grid sites

Substations
The name of the substation and the emergency contact number will be on the site sign.



Overhead lines
The reference number of the tower and the emergency contact number will be on this type of sign.

Contact National Grid

Plant protection

For routine enquiries regarding planned, scheduled or emergency works, contact the Plant Protection team online, by email, post or phone.

www.beforeyoudig.nationalgrid.com

Email: plantprotection@nationalgrid.com

Phone: 0800 688 588

Write to:
National Grid Plant Protection
Brick Kiln Street
Hinckley
Leicestershire
LE10 0NA

Emergencies

In the event of occurrences such as a cable strike, coming into contact with an overhead line conductor or identifying any hazards or problems with National Grid's equipment, phone our emergency number 0800 404 090 (option 1).

If you have apparatus within 30m of a National Grid asset, please ensure that the emergency number is included in your site's emergency procedures.

Consider safety

Consider the hazards identified in this document when working near electrical equipment

APPENDIX 1

04

Part 1
Electricity transmission infrastructure

National Grid owns and maintains the high-voltage electricity transmission network in England and Wales (Scotland has its own networks). It's responsible for balancing supply with demand on a minute-by-minute basis across the network.

Overhead lines

Overhead lines consist of two main parts – pylons (also called towers) and conductors (or wires). Pylons are typically steel lattice structures mounted on concrete foundations. A pylon's design can vary due to factors such as voltage, conductor type and the strength of structure required.

Conductors, which are the 'live' part of the overhead line, hang from pylons on insulators. Conductors come in several different designs depending on the amount of power that is transmitted on the circuit.

In most cases, National Grid's overhead lines operate at 275kV or 400kV.

Underground cables

Underground cables are a growing feature of National Grid's network. They consist of a conducting core surrounded by layers of insulation and armour. Cables can be laid in the road, across open land or in tunnels. They operate at a range of voltages, up to 400kV.

Substations

Substations are found at points on the network where circuits come together or where a rise or fall in voltage is required. Transmission substations tend to be large facilities containing equipment such as power transformers, circuit breakers, reactors and capacitors. Diesel generators and compressed air systems are also found there.

Part 2
Statutory requirements for working near high-voltage electricity

The legal framework that regulates electrical safety in the UK is *The Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002*. This also details the minimum electrical safety clearances, which are used as a basis for the Energy Networks Association (ENA) TS 43-8. These standards have been agreed by CENELEC (European Committee for Electrotechnical Standardisation) and also form part of the *British Standard BS EN 50341-1:2012 Overhead Electrical Lines exceeding AC 1kV*. All electricity companies are bound by these rules, standards and technical specifications. They are required to uphold them by their operator's licence.

Electrical safety clearances

It is essential that a safe distance is kept between the exposed conductors and people and objects when working near National Grid's electrical assets. A person does not have to touch an exposed conductor to get a life-threatening electric shock. At the voltages National Grid operates at, it is possible for electricity to jump up to several metres from an exposed conductor and kill or cause serious injury to anyone who is nearby. For this reason, there are several legal requirements and safety standards that must be met.

Any breach of legal safety clearances will be enforced in the courts. This can – and has – resulted in the removal of an infringement, which is normally at the cost of the developer or whoever caused it to be there. Breaching safety clearances, even temporarily, risks a serious incident that could cause serious injury or death.

National Grid will, on request, advise planning authorities, developers or third parties on any safety clearances and associated issues. We can supply detailed drawings of all our overhead line assets marked up with relevant safe areas.

APPENDIX 1

05

Part 3

What National Grid will do for you and your development

Provision of information

National Grid should be notified well in advance of any works or developments taking place near our electrical assets. We can then provide the following services:

Drawings

National Grid will provide relevant drawings of overhead lines or underground cables to make sure the presence and location of our services are known. Once a third party or developer has contacted us, we will supply the drawings for free.

400kV

The maximum nominal voltage of the underground cables in National Grid's network

Risk or impact identification

National Grid can help identify any hazards or risks that the presence of our assets might bring to any works or developments. This includes both the risk to safety from high-voltage electricity and longer-term issues, such as induced currents, noise and maintenance access that may affect the outcome of the development. National Grid will not authorise specific working procedures, but we can provide advice on best practice.

APPENDIX 1

06

Risks or hazards to be aware of

This section includes a brief description of some of the hazards and issues that a third party or developer might face when working or developing close to our electrical infrastructure.

Land and access

National Grid has land rights in place with landowners and occupiers, which cover our existing overhead lines and underground cable network. These agreements, together with legislation set out under the *Electricity Act 1989*, allow us to access our assets to maintain, repair and renew them. The agreements also lay down restrictions and covenants to protect the integrity of our assets and meet safety regulations. Anyone proposing a development close to our assets should carefully examine these agreements.

Our agreements often affect land both inside and outside the immediate vicinity of an asset. Rights will include the provision of access, along with restrictions that ban the development of land through building, changing levels, planting and other operations. Anyone looking to develop close to our assets must consult with National Grid first.

For further information, contact Plant Protection:

Email: plantprotection@nationalgrid.com
Phone: 0800 688 588

Electrical clearance from overhead lines

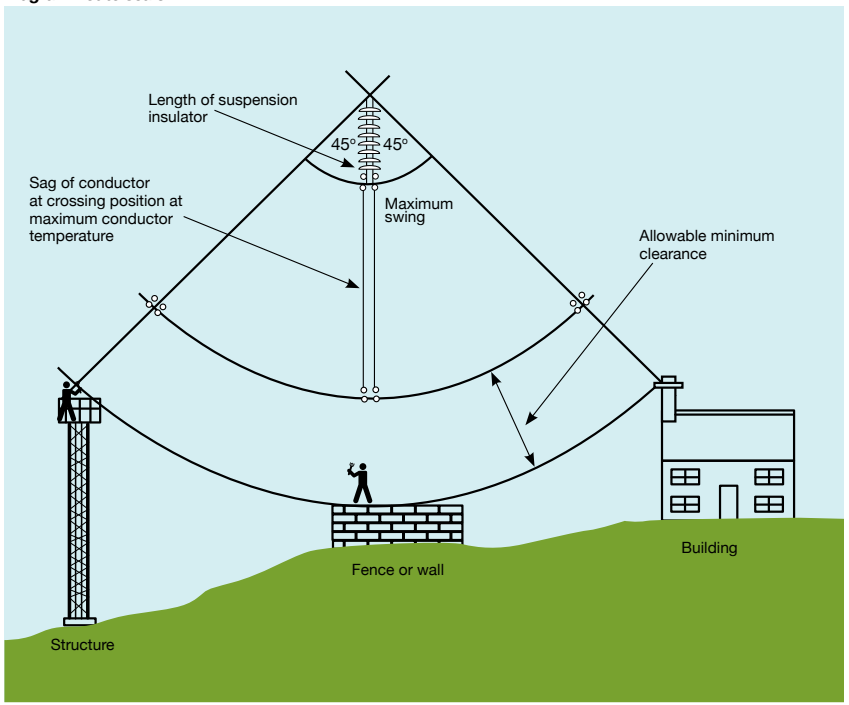
The clearance distances referred to in this section are specific to 400kV overhead lines. National Grid can advise on the distances required around different voltages i.e. 132kV and 275kV.

As we explained earlier, *Electrical Networks Association TS 43-8* details the legal clearances to our overhead lines.The minimum clearance between the conductors of an overhead line and the ground is 7.3m at maximum sag. The sag is the vertical distance between the wire's highest and lowest point. Certain conditions, such as power flow, wind speed and air temperature can cause conductors to move and allowances should be made for this.

The required clearance from the point where a person can stand to the conductors is 5.3m. To be clear, this means there should be at least 5.3m from where someone could stand on any structure (i.e. mobile and construction equipment) to the conductors. Available clearances will be assessed by National Grid on an individual basis.

National Grid expects third parties to implement a safe system of work whenever they are near overhead lines. We recommend that guidance such as *HSE Guidance Note GS6 (Avoiding Danger from Overhead Power Lines)* is followed, which provides advice on how to avoid danger from all overhead lines, at all voltages. If you are carrying out work near overhead lines you must contact National Grid, who will provide the relevant profile drawings.

Diagram not to scale



There should be at least 5.3m between the conductors and any structure someone could stand on

7.3m

The required minimum clearance between the conductors of an overhead line, at maximum sag, and the ground

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APPENDIX 1

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The undergrounding of electricity cables at Ross-on-Wye

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Underground cables

Underground cables operating at up to 400kV are a significant part of the National Grid Electricity Transmission network. When your works will involve any ground disturbance it is expected that a safe system of work is put in place and that you follow guidance such as *HSG 47 (Avoiding Danger from Underground Services)*.

You must contact National Grid to find out if there are any underground cables near your proposed works. If there are, we will provide cable profiles and location drawings and, if required, on-site supervision of the works. Cables can be laid under roads or across industrial or agricultural land. They can even be layed in canal towpaths and other areas that you would not expect.

Cables crossing any National Grid high-voltage (HV) cables directly buried in the ground are required to maintain a minimum seperation that will be determined by National Grid on a case-by-case basis. National Grid will need to do a rating study on the existing cable to work out if there are any adverse effects on either cable rating. We will only allow a cable to cross such an area once we know the results of the re-rating. As a result, the clearance distance may need to be increased or alternative methods of crossing found.

For other cables and services crossing the path of our HV cables, National Grid will need confirmation that published standards and clearances are met.

Impressed voltage

Any conducting materials installed near high-voltage equipment could be raised to an elevated voltage compared to the local earth, even when there is no direct contact with the high-voltage equipment. These impressed voltages are caused by inductive or capacitive coupling between the high-voltage equipment and nearby conducting materials and can occur at distances of several metres away from the equipment. Impressed voltages may damage your equipment and could potentially injure people and animals, depending on their severity. Third parties should take impressed voltages into account during the early stages and initial design of any development, ensuring that all structures and equipment are adequately earthed at all times.

Section continues on next page »

APPENDIX 1

08

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Earth potential rise

Under certain system fault conditions – and during lightning storms – a rise in the earth potential from the base of an overhead line tower or substation is possible. This is a rare phenomenon that occurs when large amounts of electricity enter the earth. This can pose a serious hazard to people or equipment that are close by.

We advise that developments and works are not carried out close to our tower bases, particularly during lightning storms.

Noise

Noise is a by-product of National Grid's operations and is carefully assessed during the planning and construction of any of our equipment. Developers should consider the noise emitted from National Grid's sites or overhead lines when planning any developments, particularly housing. Low-frequency hum from substations can, in some circumstances, be heard up to 1km or more from the site, so it is essential that developers find adequate solutions for this in their design. Further information about likely noise levels can be provided by National Grid.

Maintenance access

National Grid needs to have safe access for vehicles around its assets and work that restricts this will not be allowed. In terms of our overhead lines, we wouldn't want to see any excavations made, or permanent structures built, that might affect the foundations of our towers. The size of the foundations around a tower base depends on the type of tower that is built there. If you wish to carry out works within 30m of the tower base, contact National Grid for more information. Our business has to maintain access routes to tower bases with land owners. For that reason, a route wide enough for an HGV must be permanently available. We may need to access our sites, towers, conductors and underground cables at short notice.

30m

If you wish to carry out work within this distance of the tower base, you must contact National Grid for more information

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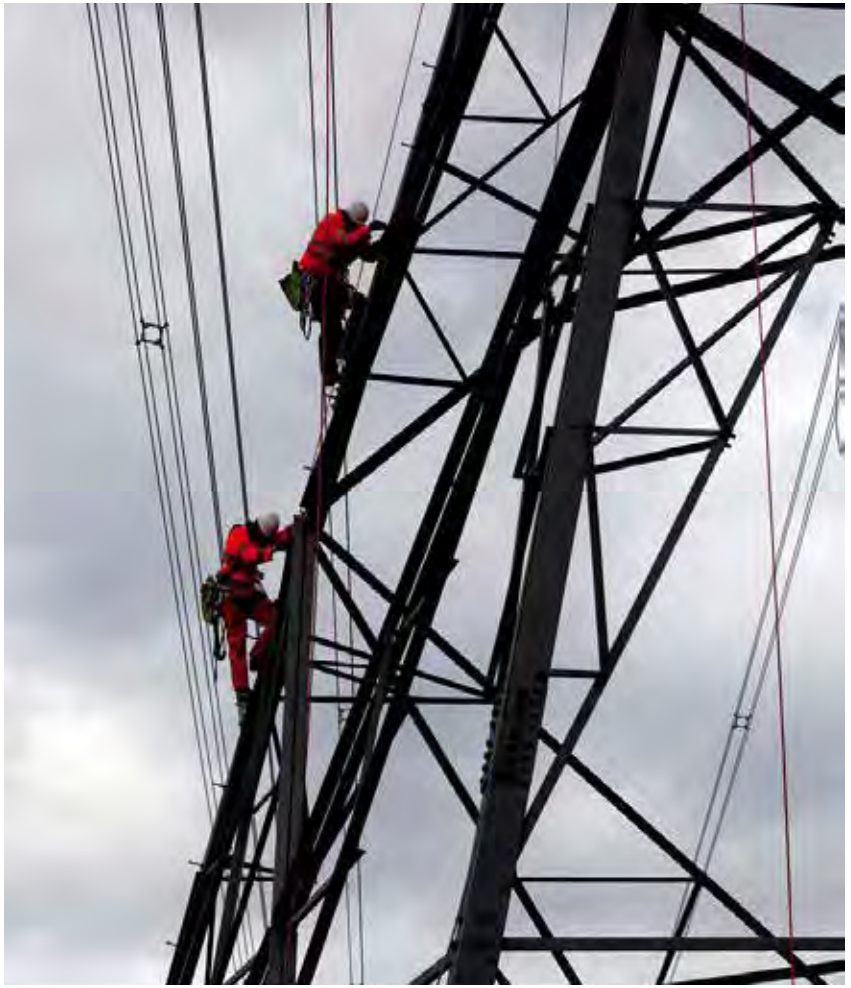

APPENDIX 1

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Fires and firefighting

National Grid does not recommend that any type of flammable material is stored under overhead lines. Developers should be aware that in certain cases the local fire authority will not use water hoses to put out a fire if there are live, high-voltage conductors within 30m of the seat of the fire *(as outlined in ENA TS 43-8)*.

In these situations, National Grid would have to be notified and reconfigure the system – to allow staff to switch out the overhead line – before any firefighting could take place. This could take several hours.

We recommend that any site which has a specific hazard relating to fire or flammable material should include National Grid's emergency contact details (found at the beginning and end of this document) in its fire plan information, so any incidents can be reported.

Developers should also make sure their insurance cover takes into account the challenge of putting out fires near our overhead lines.

Excavations, piling or tunnelling

You must inform National Grid of any works that have the potential to disturb the foundations of our substations or overhead line towers. This will have to be assessed by National Grid engineers before any work begins.

BS ISO 4866:2010 states that a minimum distance of 200m should be maintained when carrying out quarry blasting near our assets. However, this can be reduced with specific site surveys and changes to the maximum instantaneous charge (the amount of explosive detonated at a particular time).

All activities should observe guidance layed out in *BS 5228-2:2009*.

Microshocks

High-voltage overhead power lines produce an electric field. Any person or object inside this field that isn't earthed picks up an electrical charge. When two conducting objects – one that is grounded and one that isn't – touch, the charge can equalise and cause a small shock, known as a microshock. While they are not harmful, they can be disturbing for the person or animal that suffers the shock.

For these reasons, metal-framed and metal-clad buildings which are close to existing overhead lines should be earthed to minimise the risk of microshocks. Anything that isn't earthed, is conductive and sits close to the lines is likely to pick up a charge. Items such as deer fences, metal palisade fencing, chain-link fences and metal gates underneath overhead lines all need to be earthed.

For further information on microshocks please visit **www.emfs.info.**

200m

The minimum distance that should be maintained from National Grid assets when quarry blasting

APPENDIX 1

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Specific development guidance

Wind farms

National Grid's policy towards wind farm development is closely connected to the *Electricity Networks Association Engineering Recommendation L44 Separation between Wind Turbines and Overhead Lines, Principles of Good Practice.* The advice is based on national guidelines and global research. It may be adjusted to suit specific local applications.

There are two main criteria in the document:

(i) The turbine shall be far enough away to avoid the possibility of toppling onto the overhead line

(ii) The turbine shall be far enough away to avoid damage to the overhead line from downward wake effects, also known as turbulence

The toppling distance is the minimum horizontal distance between the worst-case pivot point of the wind turbine and the conductors hanging in still air. It is the greater of:

- the tip height of the turbine plus 10%
- or, the tip height of the turbine plus the electrical safety distance that applies to the voltage of the overhead line.

To minimise the downward wake effect on an overhead line, the wind turbine should be three times the rotor distance away from the centre of the overhead line.

Wake effects can prematurely age conductors and fittings, significantly reducing the life of the asset. For that reason, careful consideration should be taken if a wind turbine needs to be sited within the above limits. Agreement from National Grid will be required.

Commercial and housing developments

National Grid has developed a document called *A Sense of Place*, which gives advice to anyone involved in planning or designing large-scale developments that are crossed by, or close to, overhead lines.

The document focuses on existing 275kV and 400kV overhead lines on steel lattice towers, but can equally apply to 132kV and below. The document explains how to design large-scale developments close to high-voltage lines, while respecting clearances and the development's visual and environmental impact.

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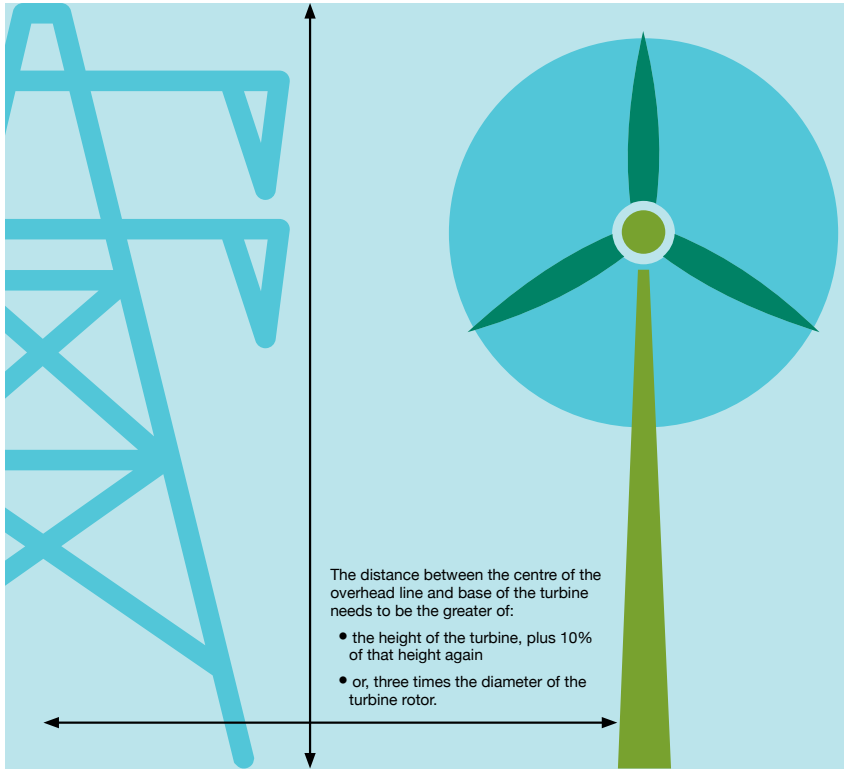
Diagram not to scale



Turbines should be far enough away to avoid the possibility of toppling onto the overhead line

APPENDIX 1

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The advice is intended for developers, designers, landowners, local authorities and communities, but is not limited to those organisations.

Overall, developers should be aware of all the hazards and issues relating to the electrical equipment that we have discussed when designing new housing.

As we explored earlier, National Grid's assets have the potential to create noise. This can be low frequency and tonal, which makes it quite noticeable. It is the responsibility of developers to take this into account during the design stage and find an appropriate solution.

Solar farms

Development of solar farms is a relatively new phenomenon. While there is limited research and recommendations available, there are several key factors to consider when designing them.

Developers may be looking to build on arable land close to National Grid's assets. In keeping with the safety clearance limits that we outlined earlier for solar panels directly underneath overhead line conductors, the highest point on the solar panels must be no more than 5.3m from the lowest conductors. This means that the maximum height of any structure will need to be determined to make sure safety clearance limits aren't breached. This could be as low as 2m. National Grid will supply profile drawings to aid the planning of solar farms and determine the maximum height of panels and equipment.

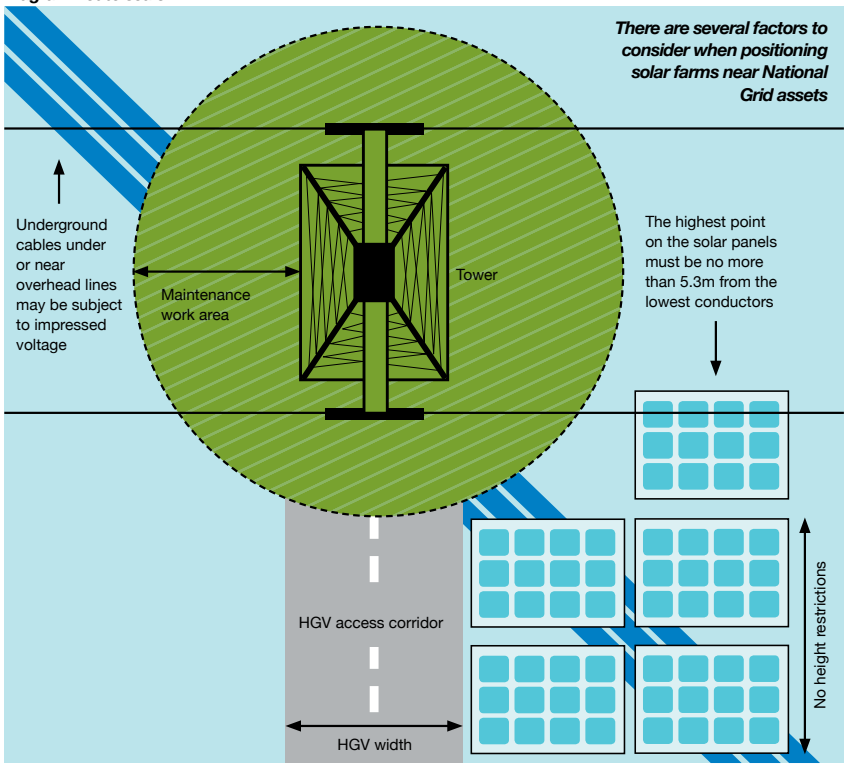
Solar panels that are directly underneath power lines risk being damaged on the rare occasion that a conductor or fitting falls to the ground. A more likely risk is ice falling from conductors or towers in winter and damaging solar panels.

There is also a risk of damage during adverse weather conditions, such as lightning storms, and system faults. As all our towers are earthed, a weather event such as lightning can cause a rise in the earth potential around the base of a tower. Solar panel support structures and supply cables should be adequately earthed and bonded together to minimise the effects of this temporary rise in earth potential.

Any metallic fencing that is located under an overhead line will pick up an electrical charge. For this reason, it will need to be adequately earthed to minimise microshocks to the public.

For normal, routine maintenance and in an emergency National Grid requires unrestricted access to its assets. So if a tower is enclosed in a solar farm compound, we will need full access for our vehicles, including access through any compound gates. During maintenance – and especially re-conductoring – National Grid would need enough space near our towers for winches and cable drums. If enough space is not available, we would require solar panels to be temporarily removed.

Diagram not to scale



APPENDIX 1

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Asset protection agreements

In some cases, where there is a risk that development will impact on National Grid's assets, we will insist on an asset protection agreement being put in place. The cost of this will be the responsibility of the developer or third party.

Contact details

Emergency situations

If you spot a potential hazard on or near an overhead electricity line, do not approach it, even at ground level. Keep as far away as possible and follow the six steps below:

- Warn anyone close by to evacuate the area
- Call our 24-hour electricity emergency number: **0800 404 090 (Option 1)**[1]
- Give your name and contact phone number
- Explain the nature of the issue or hazard
- Give as much information as possible so we can identify the location – i.e. the name of the town or village, numbers of nearby roads, postcode and (ONLY if it can be observed without putting you or others in danger) the tower number of an adjacent pylon
- Await further contact from a National Grid engineer

[1] It is critically important that you don't use this phone number for any other purpose. If you need to contact National Grid for another reason please use our Contact Centre at **www2.nationalgrid.com/contact-us** to find the appropriate information or call 01926 653 000.

Routine enquiries

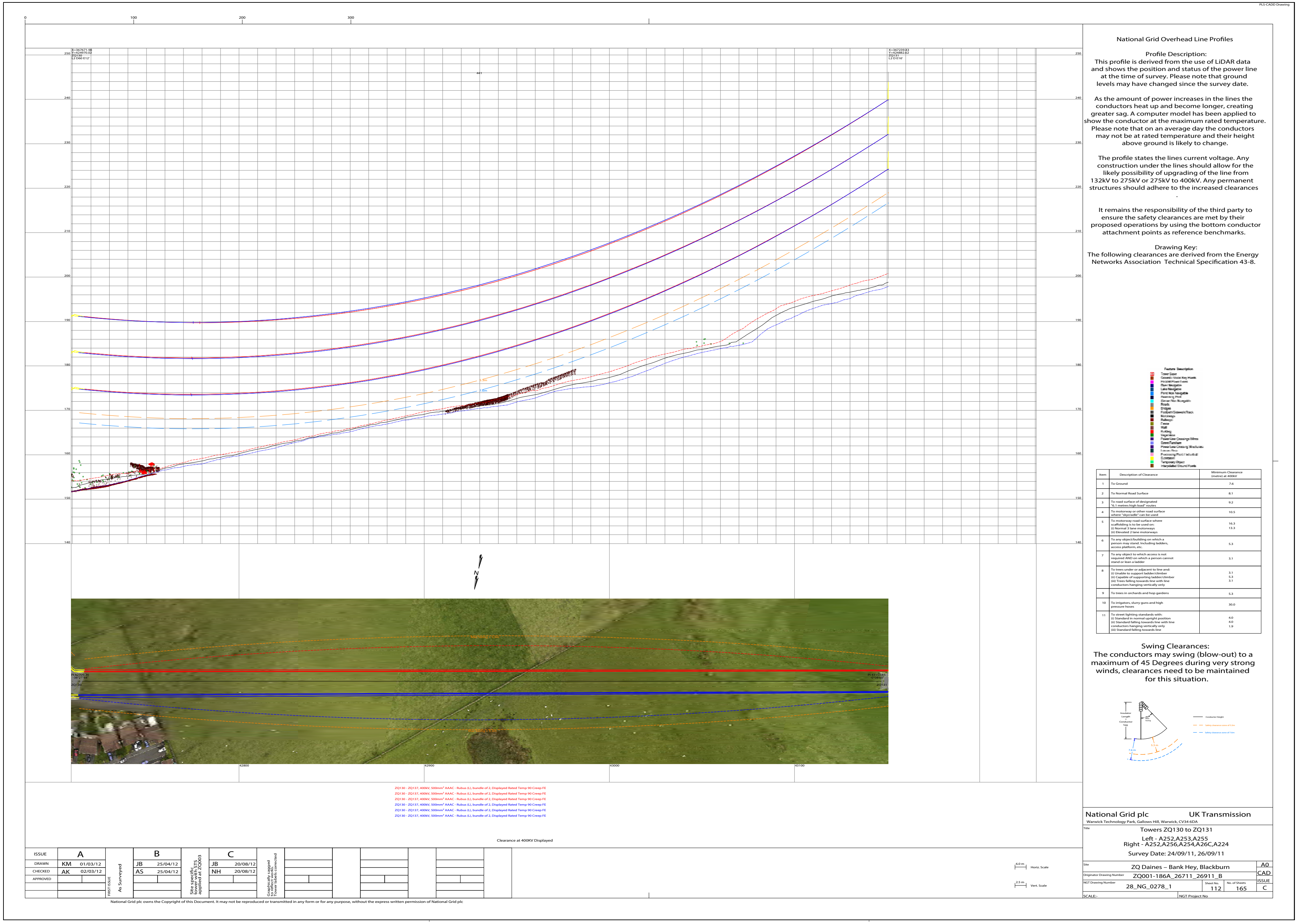
Email:
plantprotection@nationalgrid.com
(you will be sent an automated response to confirm receipt)

Call Plant Protection for free on:
0800 688 588

Opening hours:
Monday to Friday 08:00-16:30

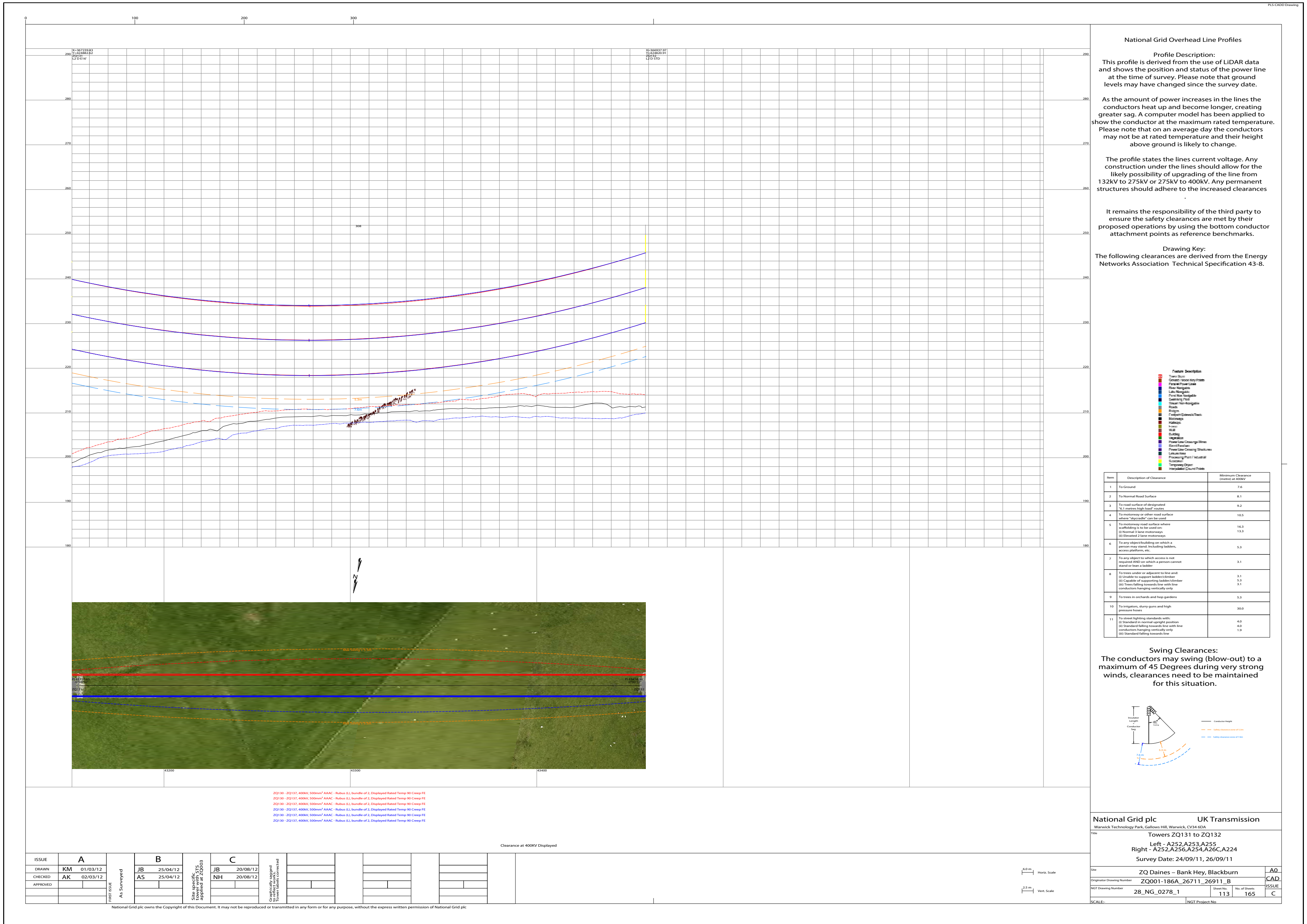
Write to:
National Grid Plant Protection,
Brick Kiln Street,
Hinckley,
Leicestershire
LE10 0NA

APPENDIX 1



Item	Description of Clearance	Minimum Clearance (metre) at 400kV
1	To Ground	7.6
2	To Normal Road Surface	8.1
3	To road surface of designated "6.1 metres high load" routes	9.2
4	To motorway or other road surface where "skycradle" can be used	10.5
5	To motorway road surface where scaffolding is to be used on: (i) Normal 3 lane motorways (ii) Elevated 2 lane motorways	16.3 13.3
6	To any object/building on which a person may stand. Including ladders, access platform, etc.	5.3
7	To any object to which access is not required AND on which a person cannot stand or lean a ladder	3.1
8	To trees under or adjacent to line and: (i) Unable to support ladder/climber (ii) Capable of supporting ladder/climber (iii) Trees falling towards line with line conductors hanging vertically only	3.1 5.3 3.1
9	To trees in orchards and hop gardens	5.3
10	To irrigators, slurry guns and high pressure hoses	30.0
11	To street lighting standards with: (i) Standard in normal upright position (ii) Standard falling towards line with line conductors hanging vertically only (iii) Standard falling towards line	4.0 4.0 1.9

APPENDIX 1


PLS-CADD Drawing
National Grid Overhead Line Profiles
Profile Description:
This profile is derived from the use of LiDAR data and shows the position and status of the power line at the time of survey. Please note that ground levels may have changed since the survey date.
As the amount of power increases in the lines the conductors heat up and become longer, creating greater sag. A computer model has been applied to show the conductor at the maximum rated temperature. Please note that on an average day the conductors may not be at rated temperature and their height above ground is likely to change.
The profile states the lines current voltage. Any construction under the lines should allow for the likely possibility of upgrading of the line from 132kV to 275kV or 275kV to 400kV. Any permanent structures should adhere to the increased clearances.
It remains the responsibility of the third party to ensure the safety clearances are met by their proposed operations by using the bottom conductor attachment points as reference benchmarks.
Drawing Key:
The following clearances are derived from the Energy Networks Association Technical Specification 43-8.
Item | Description of Clearance | Minimum Clearance (metre) at 400kV
1 | To Ground | 7.6
2 | To Normal Road Surface | 8.1
3 | To road surface of designated "6.1 metres high load" routes | 9.2
4 | To motorway or other road surface where "skycradle" can be used | 10.5
5 | To motorway road surface where scaffolding is to be used on: (i) Normal 3 lane motorways (ii) Elevated 2 lane motorways | 16.3 13.3
6 | To any object/building on which a person may stand. Including ladders, access platform, etc. | 5.3
7 | To any object to which access is not required AND on which a person cannot stand or lean a ladder | 3.1
8 | To trees under or adjacent to line and: (i) Unable to support ladder/climber (ii) Capable of supporting ladder/climber (iii) Trees falling towards line with line conductors hanging vertically only | 3.1 5.3 3.1
9 | To trees in orchards and hop gardens | 5.3
10 | To irrigators, slurry guns and high pressure hoses | 30.0
11 | To street lighting standards with: (i) Standard in normal upright position (ii) Standard falling towards line with line conductors hanging vertically only (iii) Standard falling towards line | 4.0 4.0 1.9
Swing Clearances:
The conductors may swing (blow-out) to a maximum of 45 Degrees during very strong winds, clearances need to be maintained for this situation.
Insulator Length + Conductor Sag
45° Max. Swing
5.3 m
7.6 m
Conductor Height
Safety clearance zone of 5.3m
Safety clearance zone of 7.6m
National Grid plc
UK Transmission
Warwick Technology Park, Gallows Hill, Warwick, CV34 6DA
Title
Towers ZQ131 to ZQ132
Left - A252,A253,A255
Right - A252,A256,A254,A26C,A224
Survey Date: 24/09/11, 26/09/11
Site
ZQ Daines – Bank Hey, Blackburn
A0
CAD
Originator Drawing Number
ZQ001-186A_26711_26911_B
NGT Drawing Number
28_NG_0278_1
Sheet No.
113
No. of Sheets
165
ISSUE
C
SCALE:-
NGT Project No
Clearance at 400KV Displayed
ISSUE
A
B
C
DRAWN
KM 01/03/12
JB 25/04/12
JB 20/08/12
CHECKED
AK 02/03/12
AS 25/04/12
NH 20/08/12
APPROVED
FIRST ISSUE
As Surveyed
Horiz. Scale
Vert. Scale
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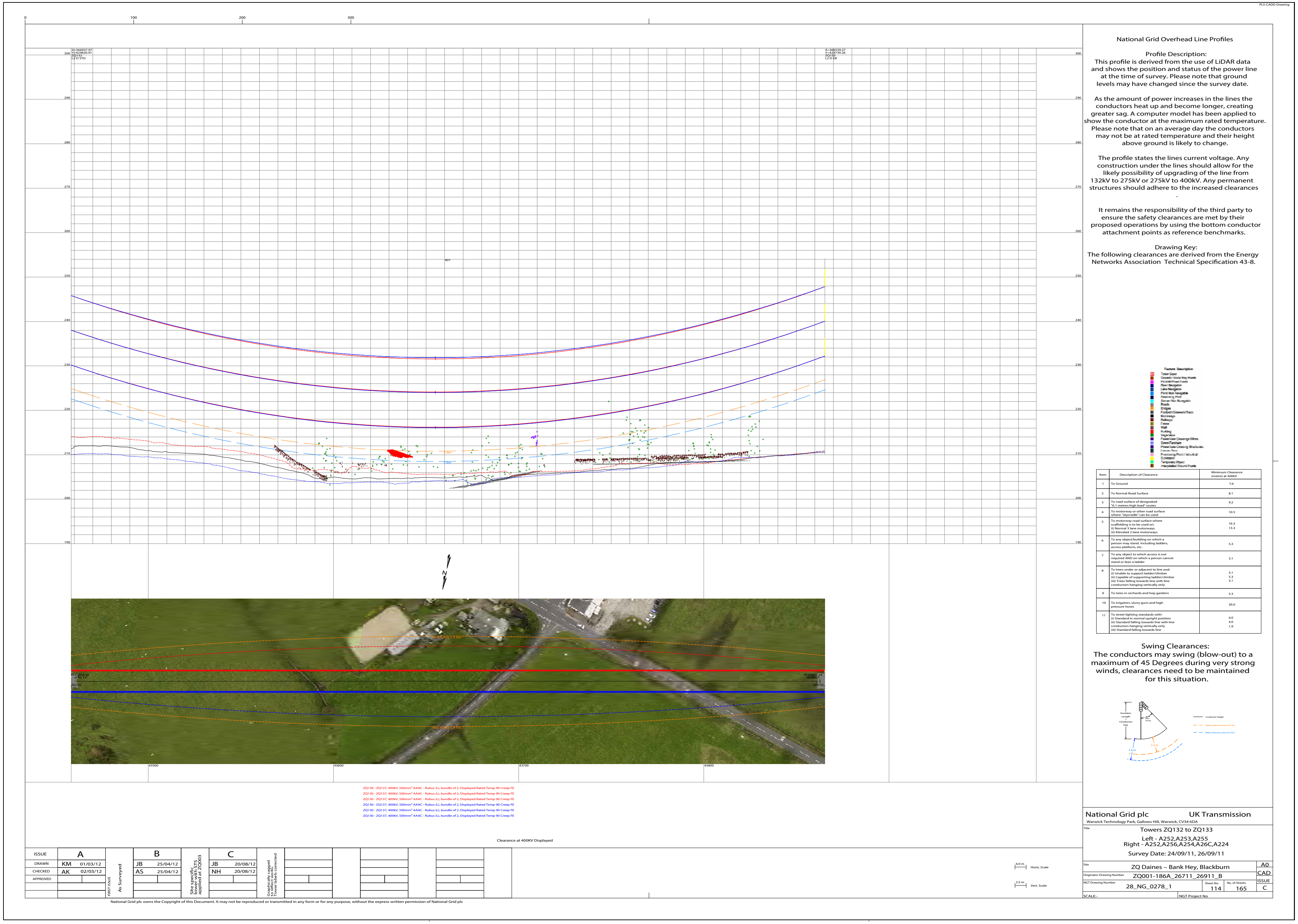
APPENDIX 1


National Grid Overhead Line Profiles
Profile Description:
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As the amount of power increases in the lines the conductors heat up and become longer, creating greater sag. A computer model has been applied to show the conductor at the maximum rated temperature. Please note that on an average day the conductors may not be at rated temperature and their height above ground is likely to change.
The profile states the lines current voltage. Any construction under the lines should allow for the likely possibility of upgrading of the line from 132kV to 275kV or 275kV to 400kV. Any permanent structures should adhere to the increased clearances
It remains the responsibility of the third party to ensure the safety clearances are met by their proposed operations by using the bottom conductor attachment points as reference benchmarks.
Drawing Key:
The following clearances are derived from the Energy Networks Association Technical Specification 43-8.
Swing Clearances:
The conductors may swing (blow-out) to a maximum of 45 Degrees during very strong winds, clearances need to be maintained for this situation.
Clearance at 400KV Displayed
National Grid plc
UK Transmission
Warwick Technology Park, Gallows Hill, Warwick, CV34 6DA
Towers ZQ132 to ZQ133
Left - A252,A253,A255
Right - A252,A256,A254,A26C,A224
Survey Date: 24/09/11, 26/09/11
ZQ Daines – Bank Hey, Blackburn
ZQ001-186A_26711_26911_B
28_NG_0278_1
114
165
A0
CAD
C
ISSUE
A
B
C
DRAWN
KM 01/03/12
JB 25/04/12
JB 20/08/12
CHECKED
AK 02/03/12
AS 25/04/12
NH 20/08/12
APPROVED
As Surveyed
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