

Proposed Residential  
Development

Grundon Waste Management Ltd  
Grundon Depot  
Higham Way  
Banbury  
OX16 4RN

**Site Constraints and  
Opportunities Analysis  
- Design Evolution**

May 2017

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# Summary

This document provides a detailed review of the opportunities and constraints for this allocated site and how these and other considerations have been fully assessed when creating development options. The resulting layout is therefore the option which achieves the optimum balance in addressing these considerations and is therefore the most appropriate development for the site.

Specifically, the form and layout of the proposed development and associated quantum and mix considers:

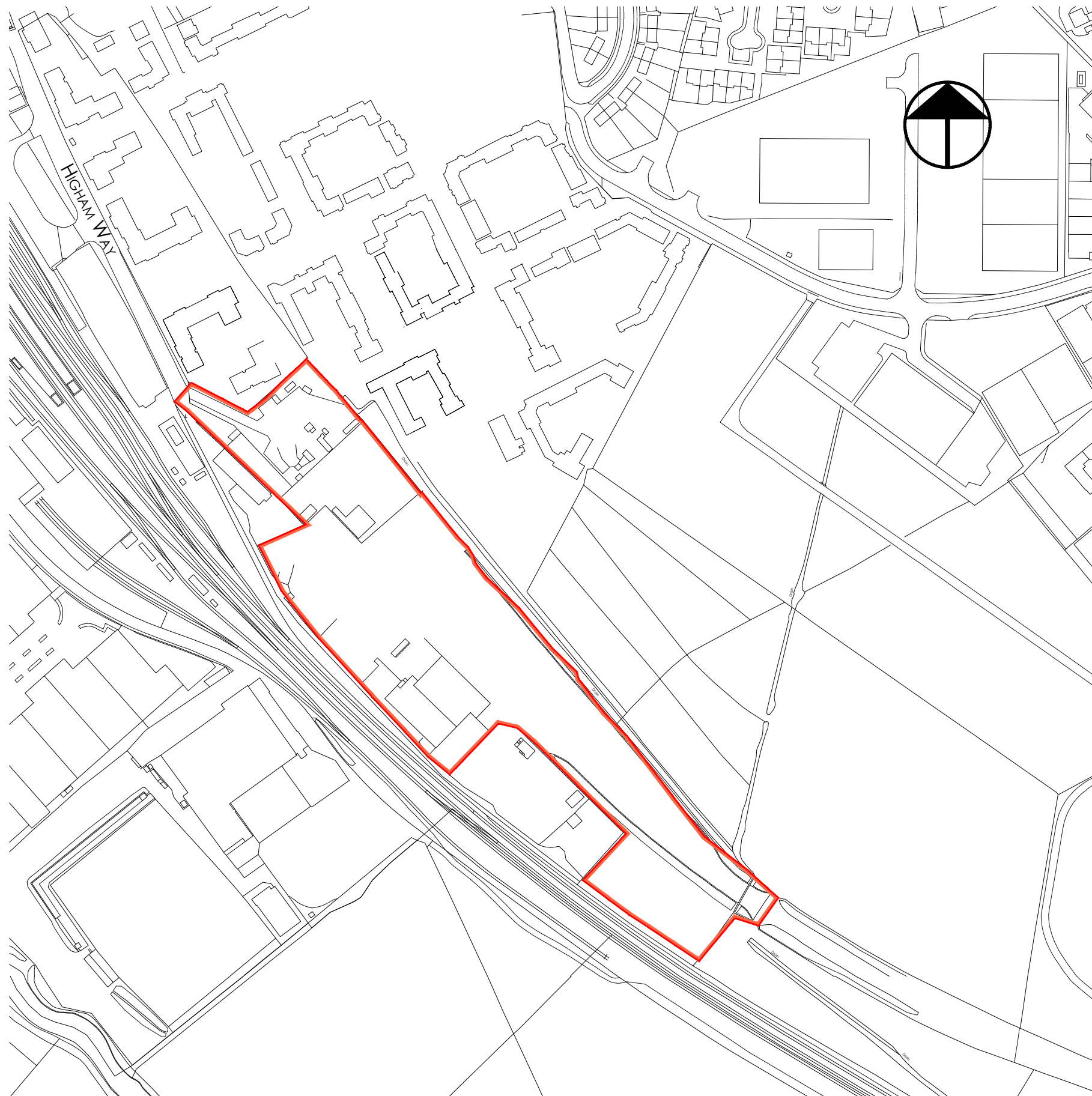
- (i) the surrounding morphology and character of the land including both current and historic land uses;
- (ii) the access constraints;
- (iii) the physical site constraints including land ownerships;
- (iv) the fact that the site contains significantly contaminated land due to former land uses;
- (v) the fact that portions of the site adjacent to the railway line fall within Flood Zone 3 (when allowing for climate change);
- (vi) the constraint of the railway line and the implications for noise and disturbance;
- (vii) natural daylight and in particular sunlight penetration given the orientation of the site;
- (viii) the need to provide sufficient outlook to all of the units on the site to provide a sufficient standard of internal living;
- (ix) vehicle movements and pedestrian linkages ensuring that the site integrates with existing movement routes, and;
- (x) ensuring that the resultant development has a high quality environment which provides all residents with a high quality of life.

This assessment concludes categorically that comprehensive flatted redevelopment of the site is the most appropriate development option for the site. The site would not be suitable for houses due to the major constraint of land contamination and the need to avoid private gardens. This conclusion is complemented by issues on the site which make it less suitable for houses, the market demands and the need to make the most efficient and effective use of the site. These matters are explored in more detail within this document.

In conclusion, the comprehensive redevelopment of the site for flats is considered to be the most appropriate form of development. This design evolution document explores the various options for the site layout with particular consideration given to balancing railway noise mitigation with outlook, daylight / sunlight, flooding and the quality of the environment.

The resultant indicative site layout which supports this Outline Planning Application is therefore the result of a detailed assessment of the site, representing the optimum design solution for the site and therefore should be supported in principle.

# 1 | Existing Urban Grain



**1.1** The local area is characterised by a very irregular urban morphology. The application site and surrounding land originally served light industrial and commercial uses which grew organically around this railway side location.

**1.2** Since the move away from rail freight dependence and the shift in planning policy which now seeks to locate dwellings in sustainable inner urban locations, many of these brownfield sites have now been redeveloped for residential purposes.

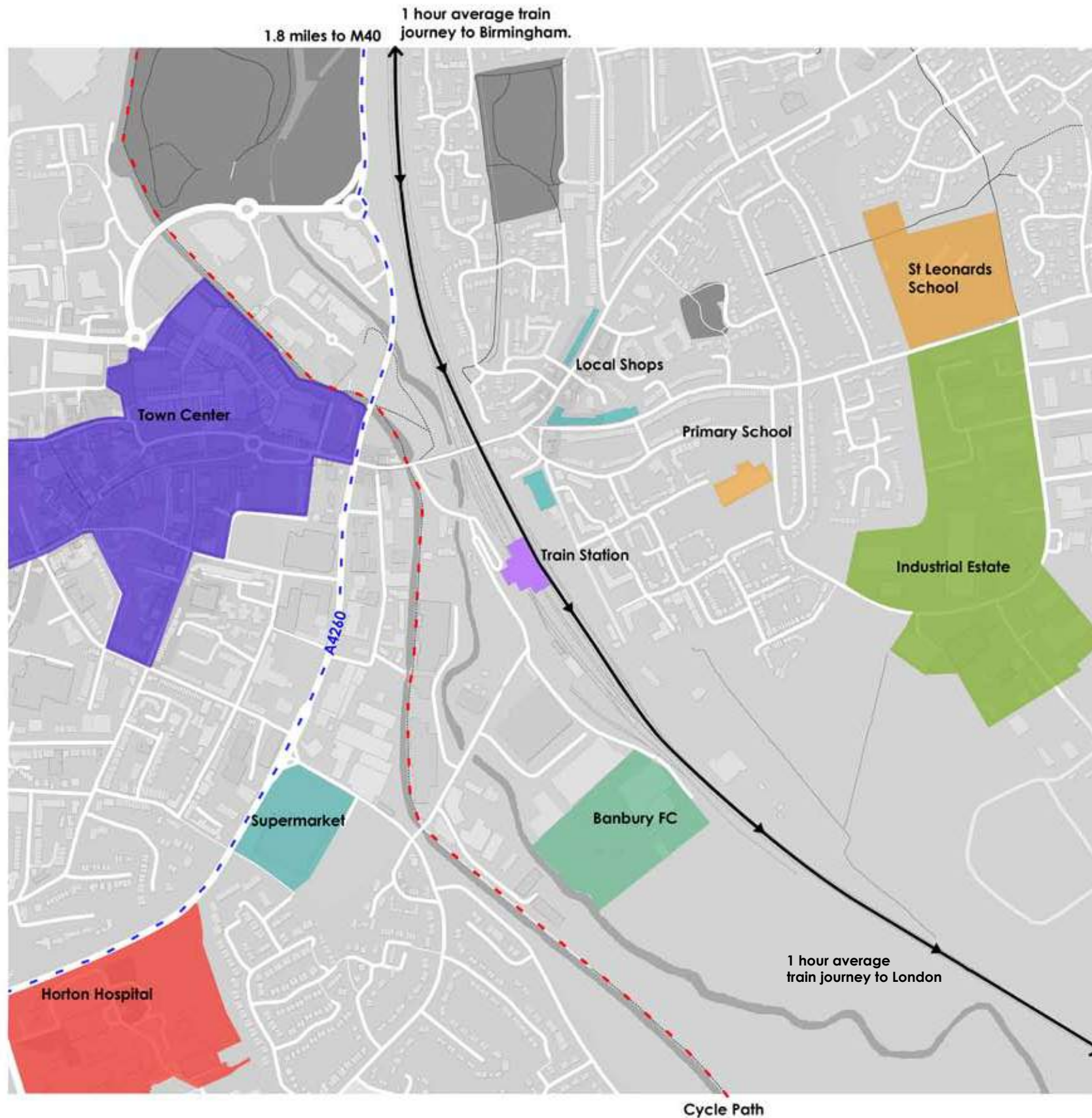
**1.3** Within the immediate context of the site, Higham Way is provided with a gateway from Merton Street by tall block buildings including modern flatted development on the north-east side of the street. This recent flatted block development continues along Higham Way leading into the application site.

**1.4** The grain of development to the east of Higham Way, whilst residential, is markedly different, formed by the 'inside out' courtyard arrangement of the Cattle Market development. Whilst regular in grain, the individual courtyards are characterised by a hotch-potch of house types which arguably exemplifies a form of development that should not be replicated.

**1.5** Accordingly, the proposals for the site have been developed with significant influence from the established residential grain of development found along Higham Way and to acknowledge the original block structure of the light industrial / commercial lineage including the remnants that exist in the wider context.



## 2 | Local Content








**2.1** The site represents a highly sustainable central location in Banbury, well served by public transports links, shops, services and community facilities.

**2.2** Formerly characterised by light industrial and commercial uses, the surrounding area is now in a predominantly residential use including the adjacent land uses along the north and east boundaries of the site.

**2.3** The site represents a highly sustainable location, in close proximity to a number of modes of public transport and the town centre. Most notably, the site is within a short walking distance of the railway station which provides direct rail links to Oxford, Birmingham and London. The site also benefits from good road links, being served by Junction 11 of the M40, providing direct routes to London and Birmingham.

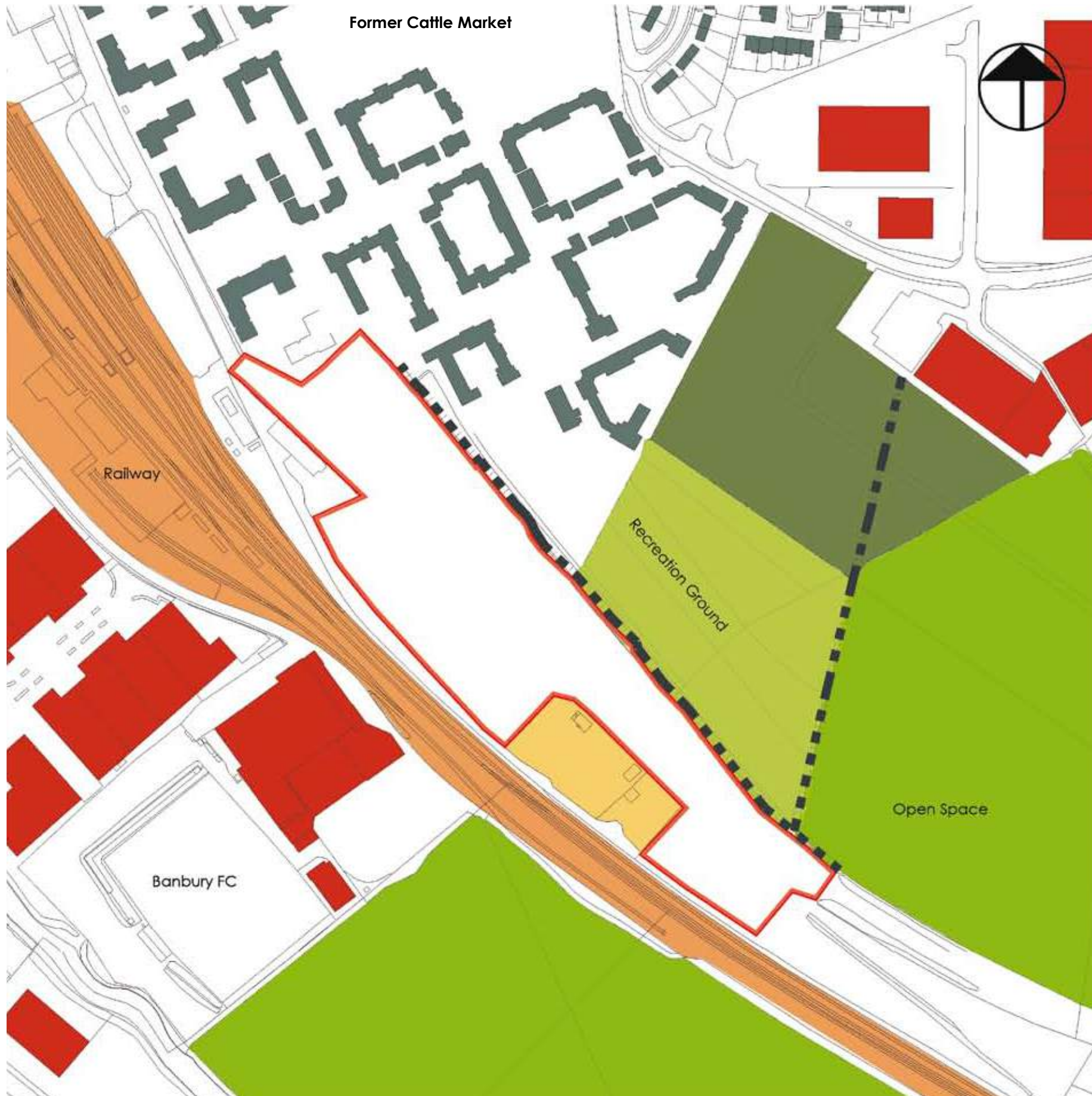
**2.4** Accordingly, the site is well suited to more intensive flatted development, particularly smaller units which have less car parking reliance and would suit tenants who would benefit the most from the sustainable transport connections including for commuting.

### Key

	Train Station
	Schools
	Industrial estate
	Football Club
	Shops
	Town Center
	Horton Hospital
	Rail Line
	A4260
	Cycle Path











# 3 | Physical Constraints



**3.1** The form of development on the site has been developed within the parameters of the physical constraints. The ownership limitations of the landowners (Grundon and Cemex) have been the starting point for determining the amount of development land available.

**3.2** The physical constraints of the land holding includes the railway line to the west, the Cattle Market Development to the north-east, the recreation ground to the east (and the separating drainage ditch) and the open land to the south-east.

## Key

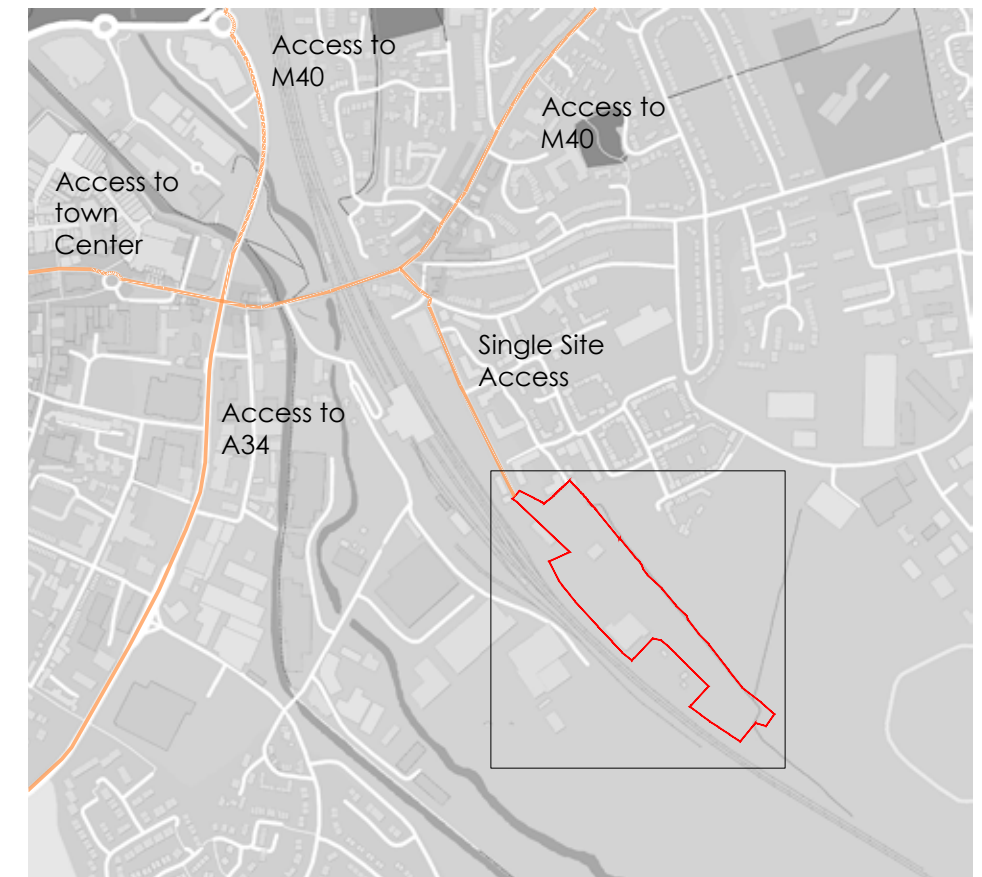
	Main Railway Line
	Land Owned by National Grid
	Residential Built Form
	Industrial / Commercial Built Form
	Allotments
	Recreational Ground Boundary
	Drainage Ditch
	Green Open Space



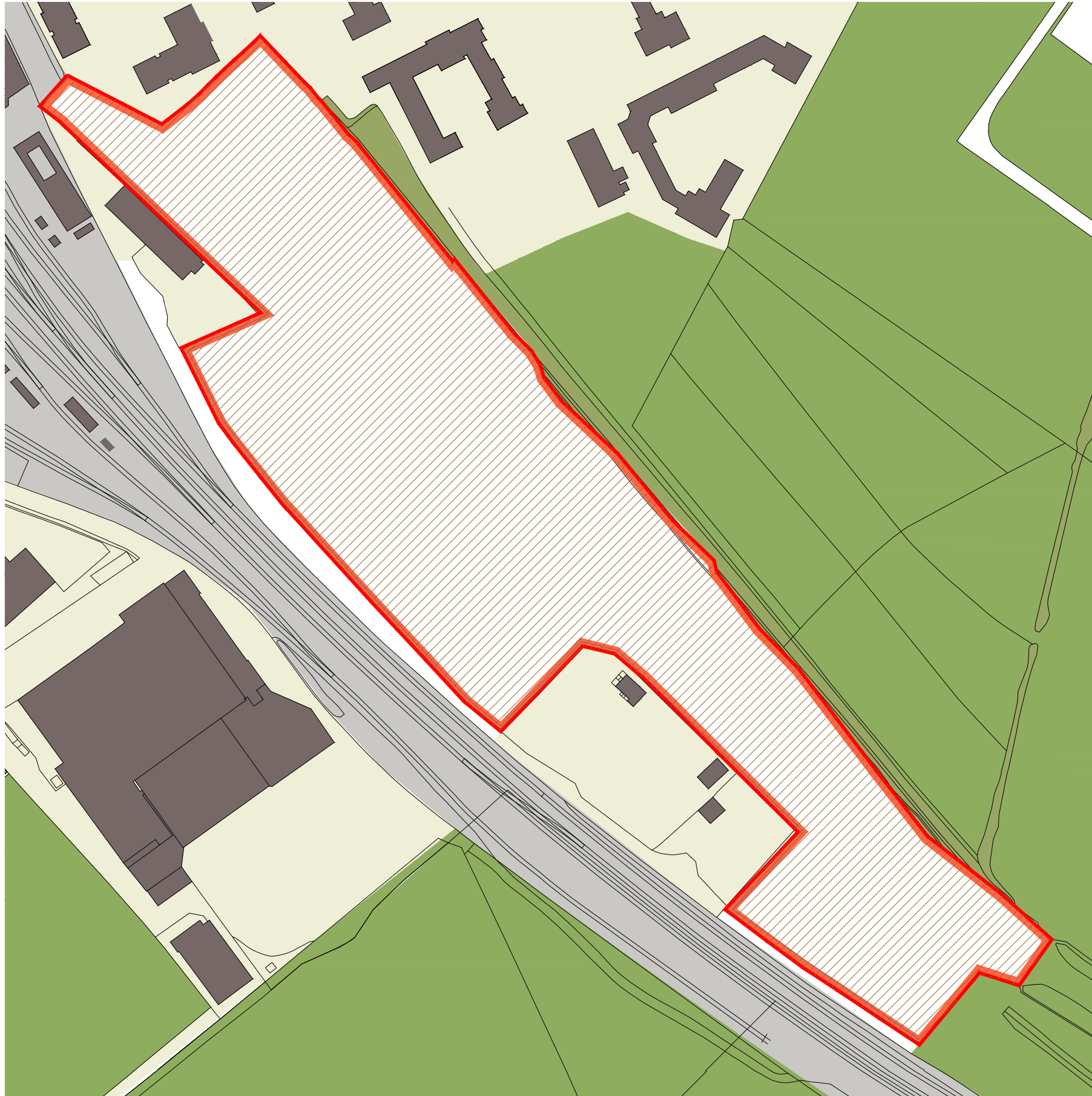
# 4 | Access

**4.1** The site is limited by a single access point off Higham Way. In developing proposals, therefore, it is necessary to provide a main central arterial route into the site allowing for efficient access to all areas. Invariably, this results in a linear distribution of buildings given the shape of the site and the physical constraints.

**4.2** In the interests of sustainability, pedestrian and cyclist access and connectivity is paramount. Accordingly, proposals for the site have been developed to maximise opportunities for non-vehicular linkages.



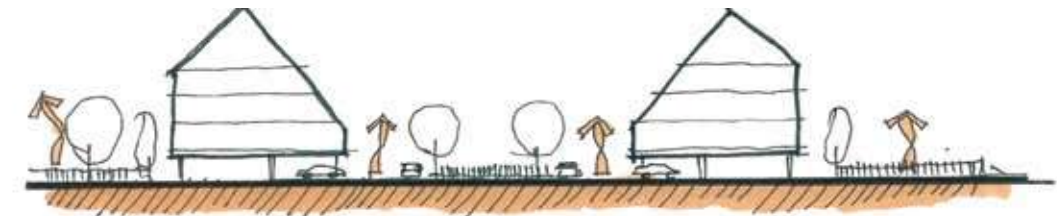
## 5 | Contaminated Land



**5.1** The site suffers from significant contamination due to its previous uses which are detailed within the overview report prepared by Knowl Hill Ltd. Given the extent of contamination and the resultant need for remediation, it is entirely logical that the site should be developed for flatted units and not individual houses.

**5.2** Flatted development allows for the provision of managed communal gardens and importantly avoids private household crop growing which could otherwise risk persons coming into contact with contamination.

**5.3** Furthermore, given the significant remediation costs, it is necessary to make most efficient use of the site in terms of unit numbers to ensure that the resultant planning permission is a viable development scheme. Naturally, this also pushes the development options for the site into flatted development.

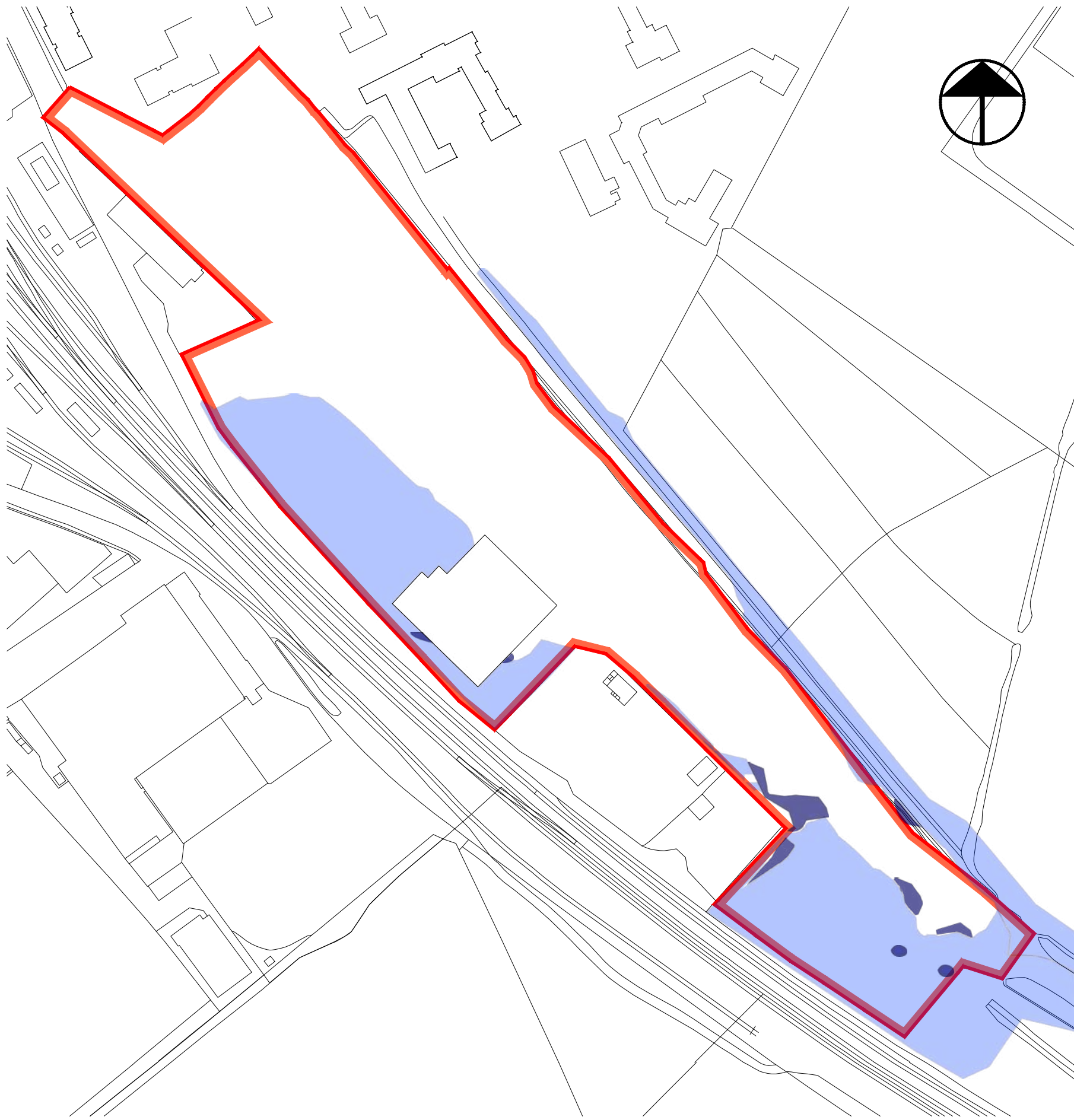


### Key



Contaminated Land



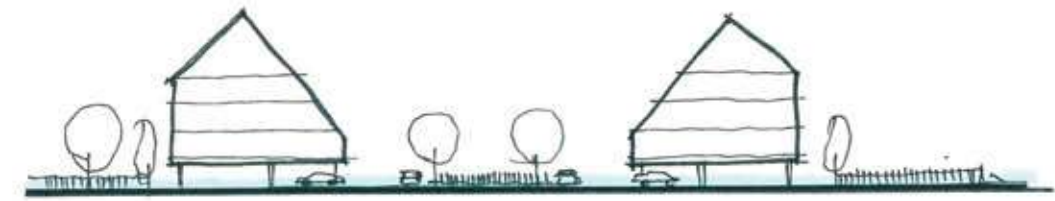


## 6 | Flooding

**6.1** When allowing for climate change, the western edge of the site falls in part within Flood Zone 3. Whilst this flood risk is theoretical based upon climate change impact assumptions, it is acknowledged that this is a material consideration in developing proposals for the site.

**6.2** Within the flood risk areas of the site, it is not therefore appropriate to provide ground floor accommodation. Accordingly, a flatted solution which proposes undercroft parking at ground floor eliminates the risk of flooding for future residents.

**6.3** The main portion of the site falls outside of the flood risk area and accordingly safe means of escape can be provided via raised roads and walkways from flood liable areas to safe refuge.



Indicative Building Section

### Key

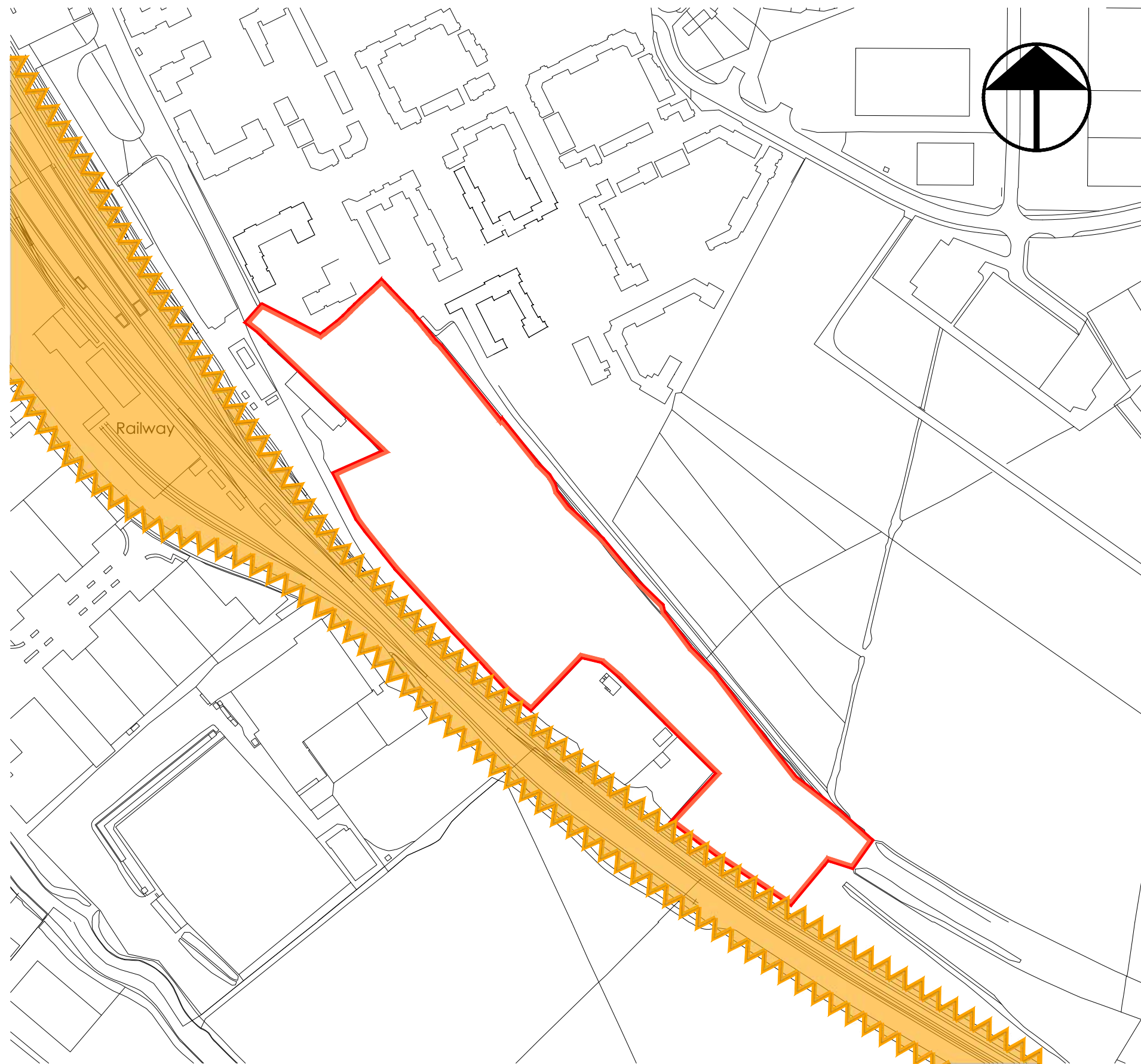


1 in 100 + 70% Climate  
Change Annual Prob.  
Flood Extent



1 in 100 + 35% Climate  
Change Annual Prob.  
Flood Extent

# 7 | Noise and Vibration



**7.1** The railway line represents a source of significant noise and vibration emanator which constrains the development of the site. Whilst mitigation measures exist, as a matter of good planning, family housing should be avoided in such locations.

**7.2** Given the significant costs associated with on site noise and vibration mitigation and the solutions found through construction techniques and specification, in the interests of project viability a flatted block form is required. This creates both the necessary economies of scale in construction and facilitates the provision of workable solutions.

**7.3** Site investigations by qualified acoustic consultants (Rupert Taylor) have revealed that boundary mitigation measures alone (such as acoustic fencing and / or an earth bund) would only mitigate noise impacts at ground floor level. Accordingly, the built form on the site must either become the mitigation itself or be positioned and orientated in a way that allows for suitable standards of living.



## Key



Noise Vibrations



# 8 | Noise and Vibration

**8.1** Given the position of the railway line and the way in which noise is transferred to the site, there are two main solutions for the layout of the site; (i) backing development onto the railway line using built form to create a noise barrier, or (ii) flanking development perpendicular onto the railway line reducing the surface area that is exposed directly to sound waves.

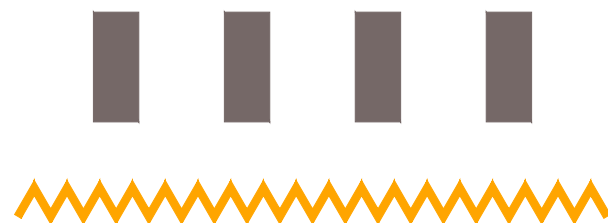
**8.2** Whilst both options offer viable solutions, flanking the development onto the railway line offered the most appropriate for the application site from the outset, particularly given the shape and orientation of the site and resultant sun path.

**8.3** Consideration has also been given to moving the main arterial road against the railway line, thereby maximising the area of developable land which is positioned furthest from the source of the noise and vibration.



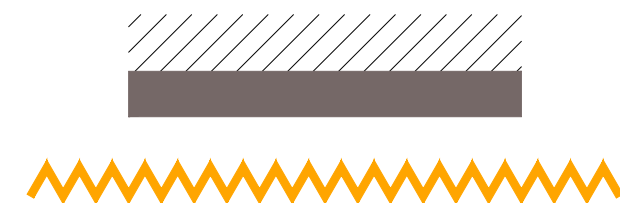
Example of flanking development onto railway - Rodger Dudman Way, Oxford

**(i)** A logical option is to flank the development onto the source of the noise. This solution minimises the area of habitable facade exposed to noise impacts thus shielding habitable accommodation. This is typically an appropriate solution where the physical parameters of the site are not substantially constrained. The layout allows for minimal overshadowing impacts, particularly to the environment and facilitates dual aspect outlook.



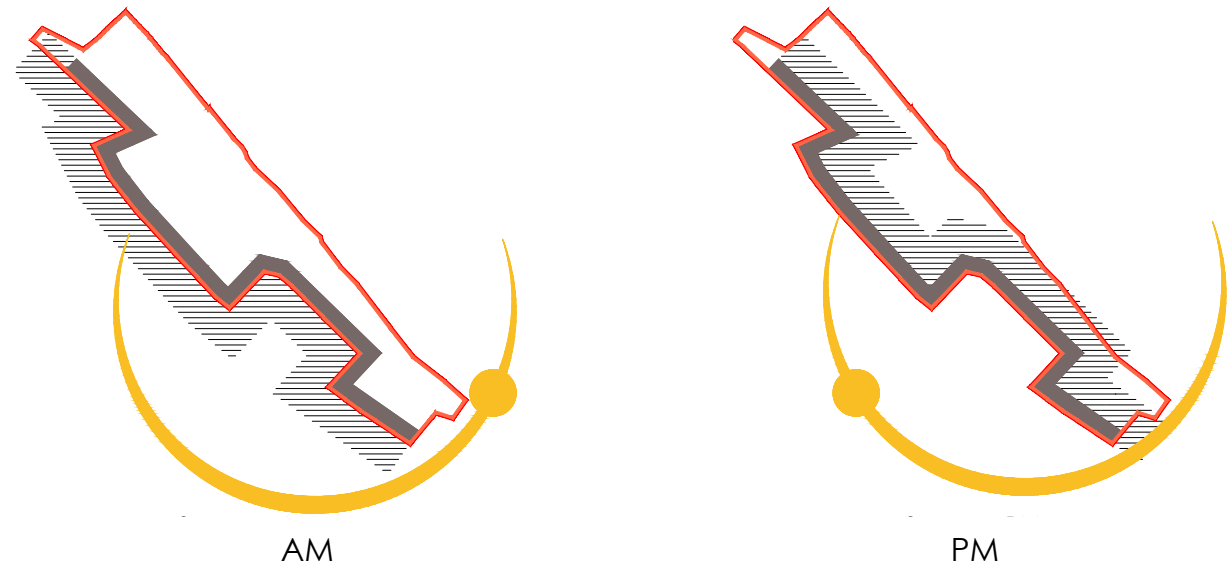
Example of backing development onto railway - Chelsea Bridge Wharf, Battersea

**(ii)** Another logical option is to run development perpendicular to the source of the noise. This method effectively uses the accommodation itself to create a noise barrier. As a method of mitigation, this is far from ideal given that it maximises exposure to noise impacts, sacrificing usable accommodation and living standards to provide a protected facade and better environment on one side. Furthermore, depending upon orientation, overshadowing can be a significant side effect, as can limited single aspect outlook from resultant units. Accordingly, this method is typically utilised in high density locations (such as London) where space is at a premium.

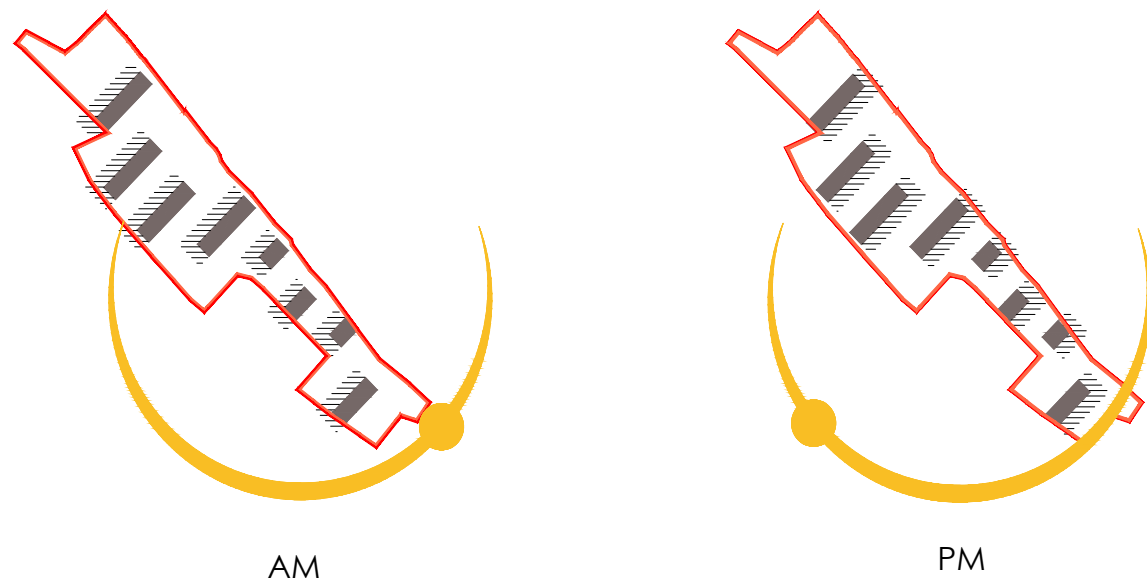


# 9 | Sun Path

**1** Given the shape and orientation of the site, a solution running parallel to the railway will result in significant overshadowing from late morning onwards. This severely affects the level of daylight to habitable room windows.

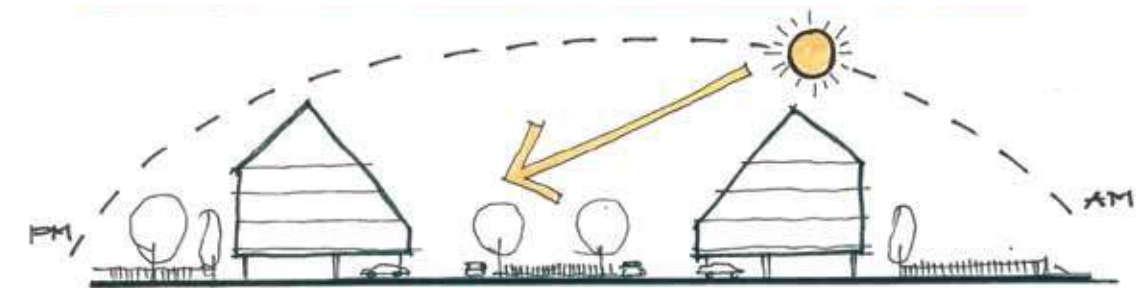


**2** A fragmented approach perpendicular to the railway line with a distribution of heights allows for greater sunlight penetration and an even distribution of daylight.



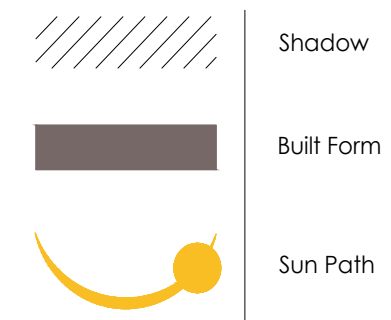
**9.1** A key constraint of the site is that the sun path conflicts with the position of the railway line (noise and vibration emanate). In order to provide a good quality environment, dwellings should aspect with maximum daylight and sunlight, both to habitable rooms and to the outside amenity space areas. In order to do this, however, an amount of the development would need to face the railway line thus suffer unacceptable levels of noise and disturbance.

**9.2** The optimum solution therefore has been to flank onto the railway line but to also angle the position of the blocks facilitating maximum sunlight penetration between the buildings. Coupled with dual aspect rooms, this solution achieves a suitable balance between providing a high quality external environment and high internal standards of living.



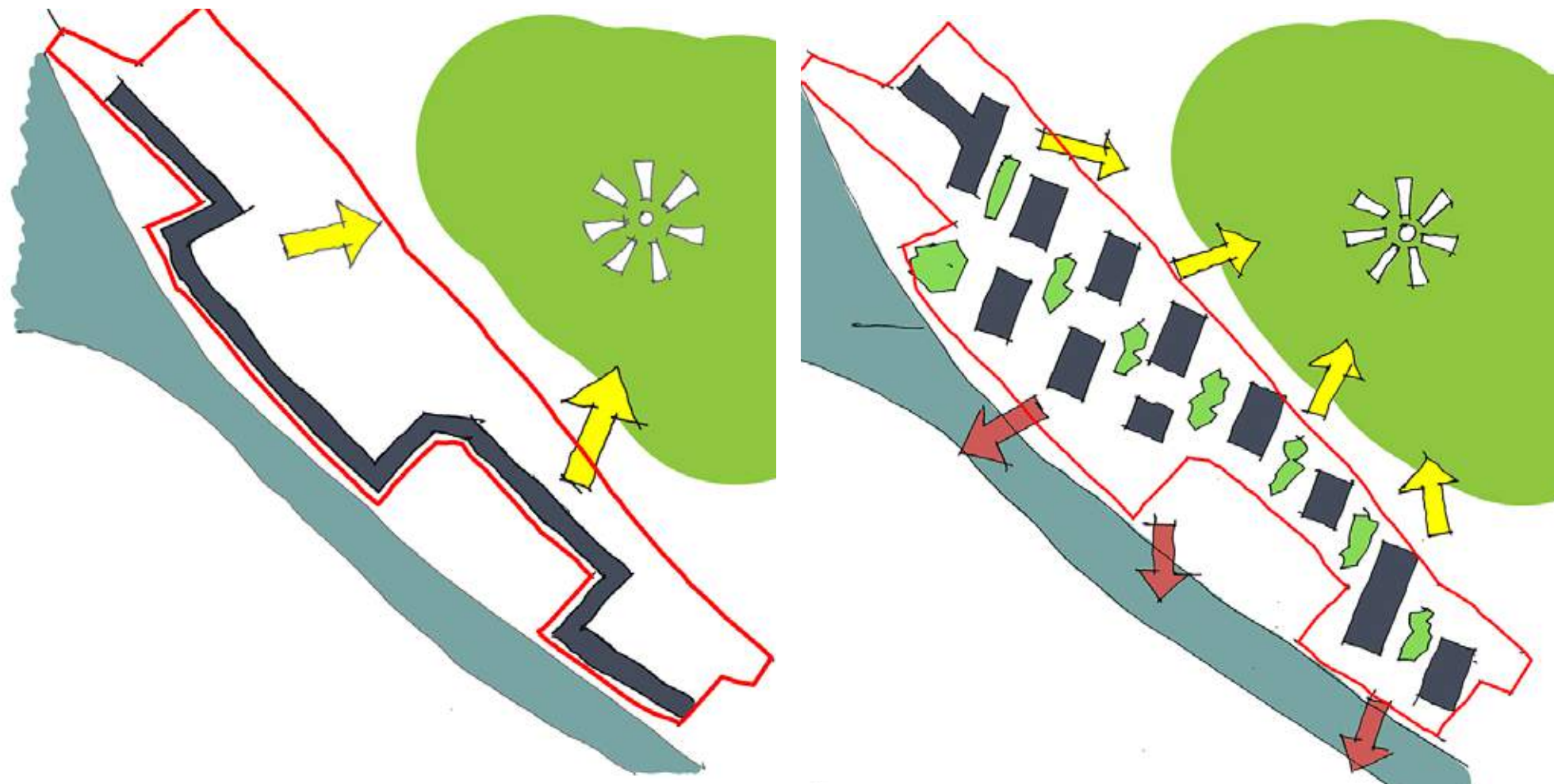
Innovative design allows the sun to penetrate the courtyards.

## Key





# 10 | Outlook



This option for development results in a single aspect at 90° to the desirable outlook northwards. This causes many units to have a poor level of outlook exacerbated by severe overshadowing and poor levels of natural light.

A fragmented linear layout with appropriate orientation perpendicular to the desired outlook increases the field of view towards visually appealing areas, allowing all properties to enjoy desirable views. Amenity space (Secondary Desirable Outlook) is visually linked with primary outlook. All units benefit from dual aspect and appropriate levels of natural daylight.

**10.1** The site suffers from limited views towards attractive areas, with the main source of attractive views being over the recreation ground to the north-east and the open land to the east. Accordingly, it is paramount to provide a high quality environment on the site, avoiding car domination and maximising soft landscaped areas and communal gardens.

**10.2** A linear block layout arranged in a flanking layout allows for direct views into these open spaces as well as oblique views towards the recreation ground and open land to the east.

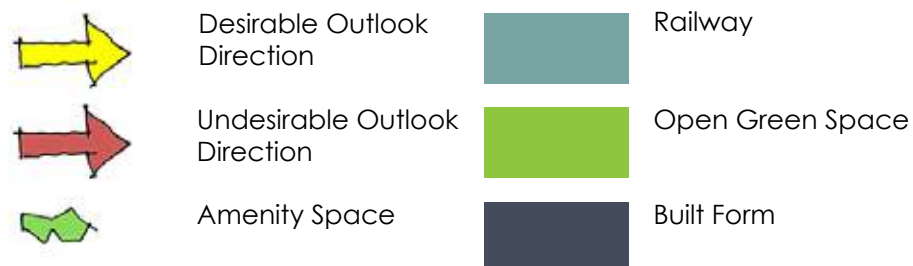
**10.3** A perimeter block backing onto the railway would create a single aspect which would, by necessity, result in outlook upon car parking dominated areas. A fragmented linear layout allows for green areas to intersperse the site, maximising the potential for the environment.

**10.4** In contrast to flatted development which consolidates the footprint of units, development of the site for houses would create a much harder urban form, with far greater built coverage and hard-surfacing. Given the physical constraints of the site, the resultant development would therefore likely produce a far less inviting quality of environment, with relatively poor outlook for many of the units and cramped relationship.

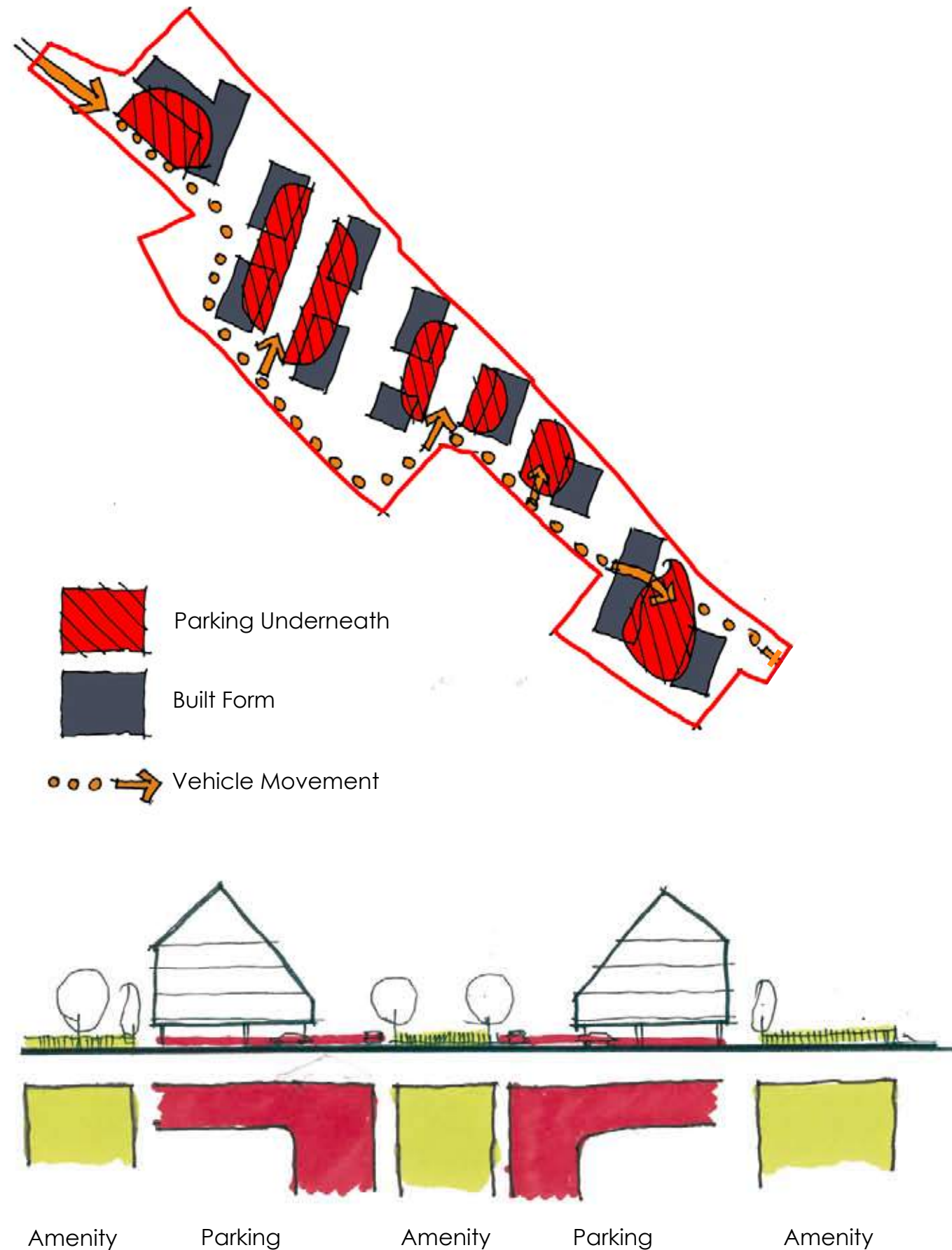


Roof forms designed to allow maximum views from all balconies into the amenity space whilst preventing overlooking into the balconies below

## Key



# 11 | Vehicle Movement



**11.1** Any development option for the site would require the provision of a single arterial road linking the units to Higham Way. There is no requirement for a through road linking to the undeveloped land to the east. The provision of such a road would render the site unviable.

**11.2** In regard to the positioning of the main access road, a complementary and logical solution is to position the road along the railway line, which moves the development away from the noise and vibration emanater.

**11.3** In positioning the road along the railway line, due to the irregularity of the south-west boundary, some division occurs between usable parts of the site. A 'Home Zone' approach reduces car speeds and dilutes the separation between pedestrian and vehicular spaces which is proven to make developments safer. Accordingly, the intention would be for the entire site to adopt these principles.

**11.4** Secondary roads then link to each block, continuing the Home Zone into the parking areas, further diluting the car and pedestrian zones in these areas to make a pleasant and safe environment for all.

**11.5** The resultant layout minimises the need for hard surfacing, allowing maximum opportunity for soft landscaped areas.

## Development Principles

1. The site layout should not be dominated by car parking and roads.
2. Links to the car parks to be subservient and integral to a home zone.
3. Avoid expansive parking dominated areas.
4. Utilise an amount of undercroft parking, putting cars out of view and maximising scope for soft landscaped areas.

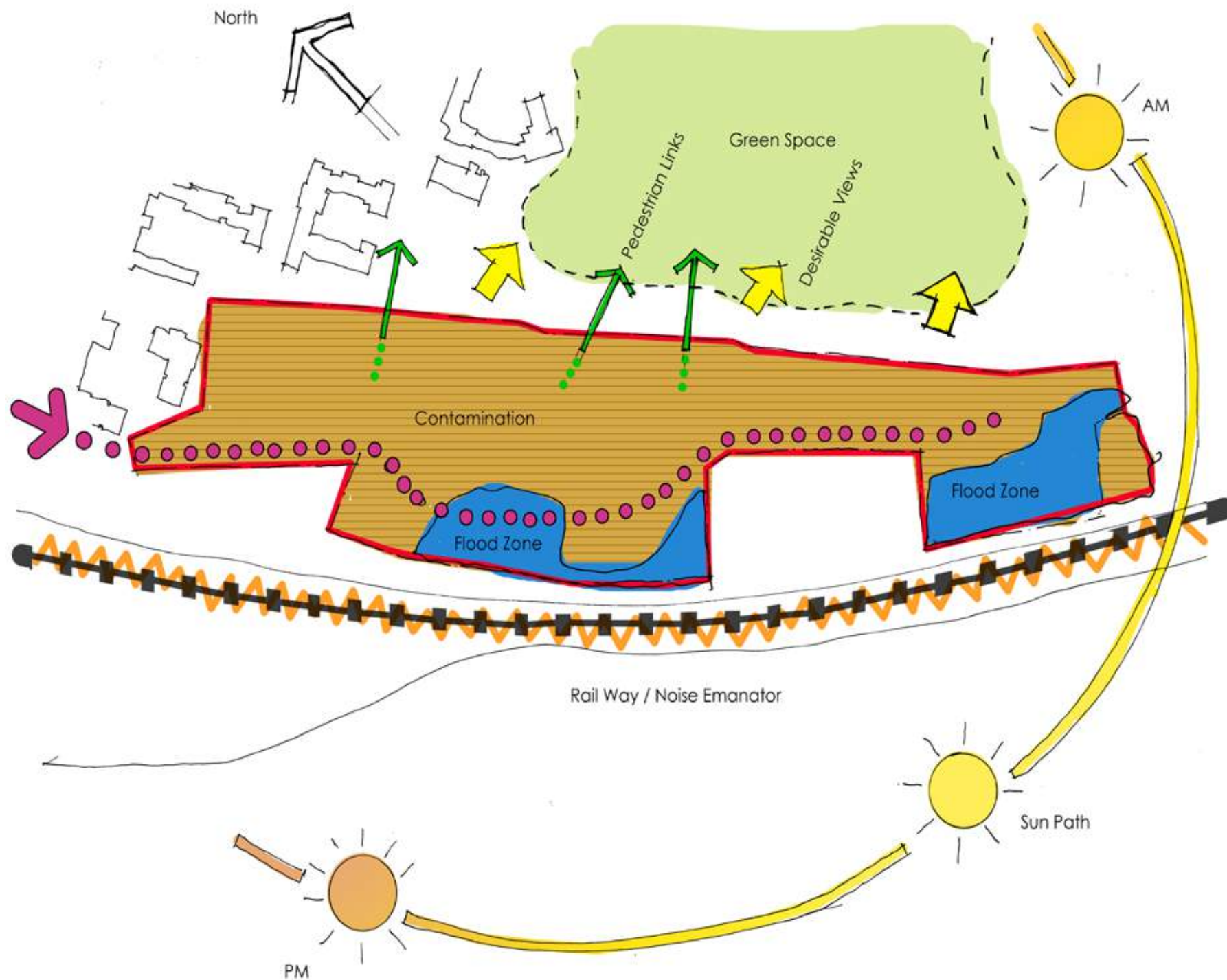


# 12 | Constraints Overview

**12.1** As explored above, the site suffers a significant number of very different constraints and site specific circumstances. The earlier sections of this document indicate that the logical development option for the site in response to these constraints is for flatted development as opposed to housing.

**12.2** The most significant reasons for this are (i) the level of contamination; (ii) the extremely sustainable location which warrants efficient and effective use of the site for higher density development and (iii) the noise impacts of the railway line. As exemplified by the development along Higham Way, flatted development is therefore most suited to this site and the redevelopment would therefore represent a continuance of this existing residential character.

**12.3** The layout and form of the flatted redevelopment options must also respond to the site constraints, with a layout adopted which creates the best environment for future occupiers, both internally and externally whilst also mitigating any negative impacts. These options are explored in the following sections.



# 13 | Option 1 - Backing Development onto the Railway

## Positives

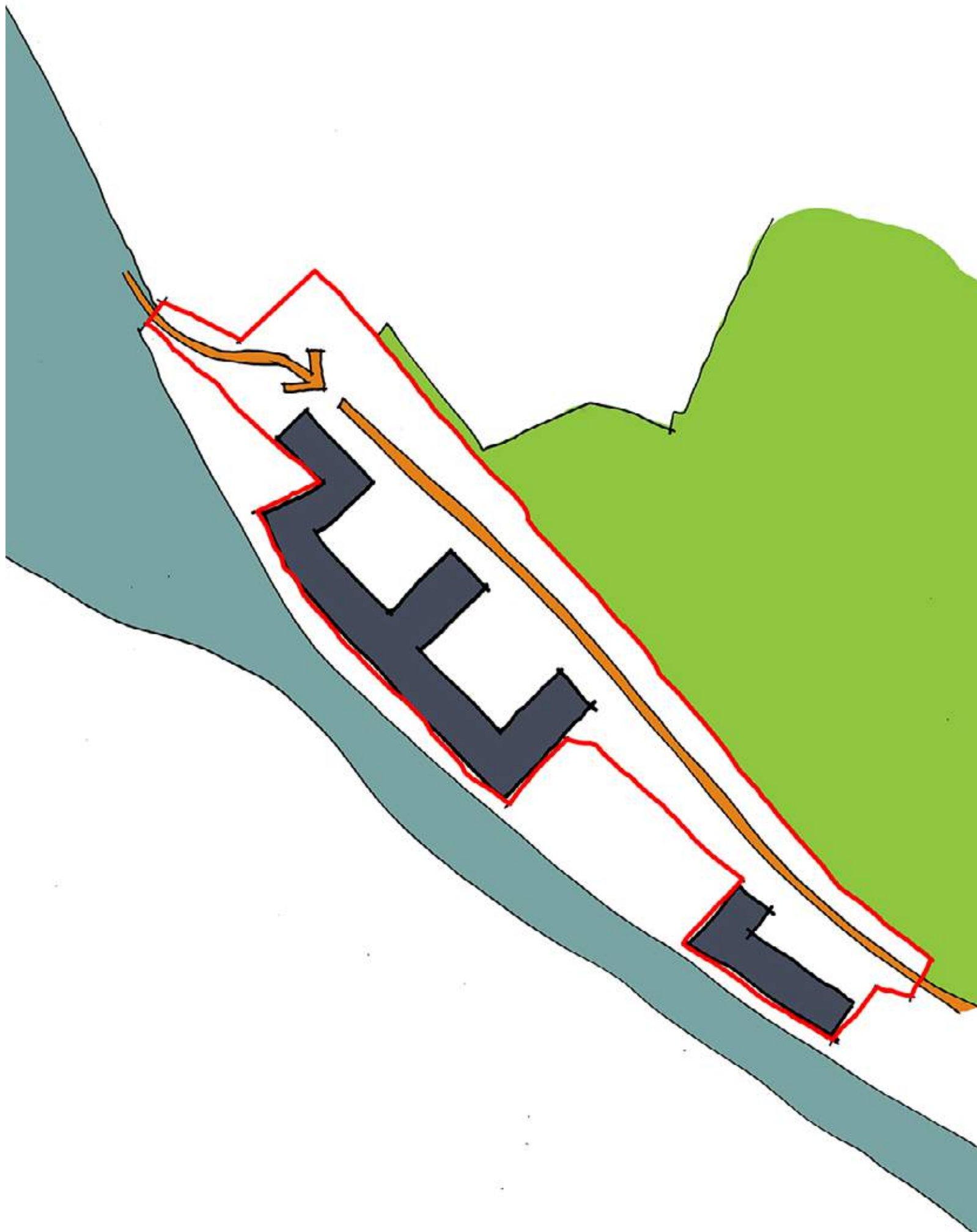
- Good noise and vibration mitigation through the use of a fabric first approach which sees the buildings used to create a tall and complete sound barrier;
- The remainder of the site is open, providing a very good amount of amenity space;
- The development screens unattractive views of the railway.

## Negatives

- Units are single aspect, with one direction of outlook to the north-east. Windows cannot be provided on railway facing elevations;
- Whilst noise is mitigated, impacts from vibration are maximised due to the close proximity to the railway;
- Due to the position of the blocks, access and parking becomes dominant along the north-east side of the site;
- Given the sun path, the habitable room windows become overshadowed for most of the day, resulting in poor daylight;
- Similarly, the external environment including amenity space is overshadowed from mid-late morning onwards;
- Unbroken block structure leading to a dominant built form, splitting the blocks results in a failure to mitigate noise effectively;
- Limited visual connectivity between key areas of the site;
- Poor design response as a result of a uniform linear development;
- Development becomes almost exclusively concentrated in the areas at risk of flooding, resulting in a very poor response.

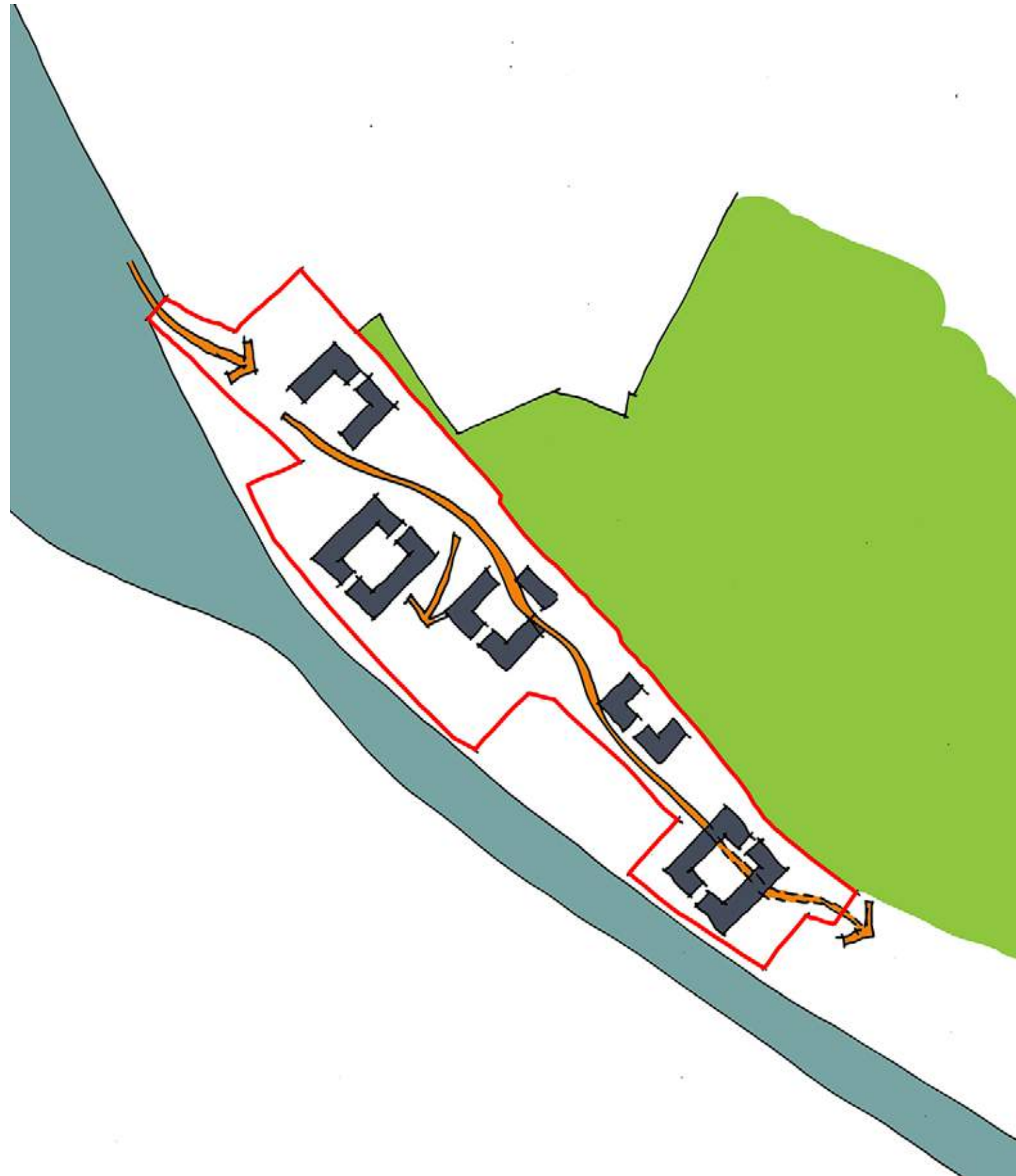
## Summary

In light of the above a linear block structure parallel to the railway will not be able to provide an effective solution to the issues raised by the site analysis.





# 14 | Option 2 - Enclosing Blocks



## Positive

- Development is taken away from the noise and vibration emanator;
- A combination of using the buildings to protect against noise and mitigation measures (such as mechanical ventilation) protects most residents;
- A reasonably positive design response due to greater flexibility in design approach;
- An improved sense of place;
- Undercroft parking can be used to avoid parking dominance and responding to flood risk areas.

## Negative

- Whilst dual aspect is achieved, the secondary outlook (into the courtyards) is of limited quality and receives limited daylight;
- The design response fails to make best use of the sun path, with significant overshadowing of habitable windows and external amenity areas during daylight hours;
- Whilst undercroft parking can be achieved, the courtyard design limits the use of undercrofts leading to some amount of parking dominance;
- The internal courtyards therefore become the main communal amenity space which is of limited quality due to being overshadowed during daylight hours;
- Limited interconnectivity between blocks resulting in a risk that blocks may become isolated with a poor sense of community and place.

## Summary

Whilst better than the option of backing onto the railway, this 'courtyard block' layout still fails to effectively respond to all of the constraints, not least sunlight and daylight. Furthermore, it is considered that a courtyard layout creates a poor sense of place and community.

# 15 | Option 3 - Angled Block Layout Perpendicular to Railway

## Positive

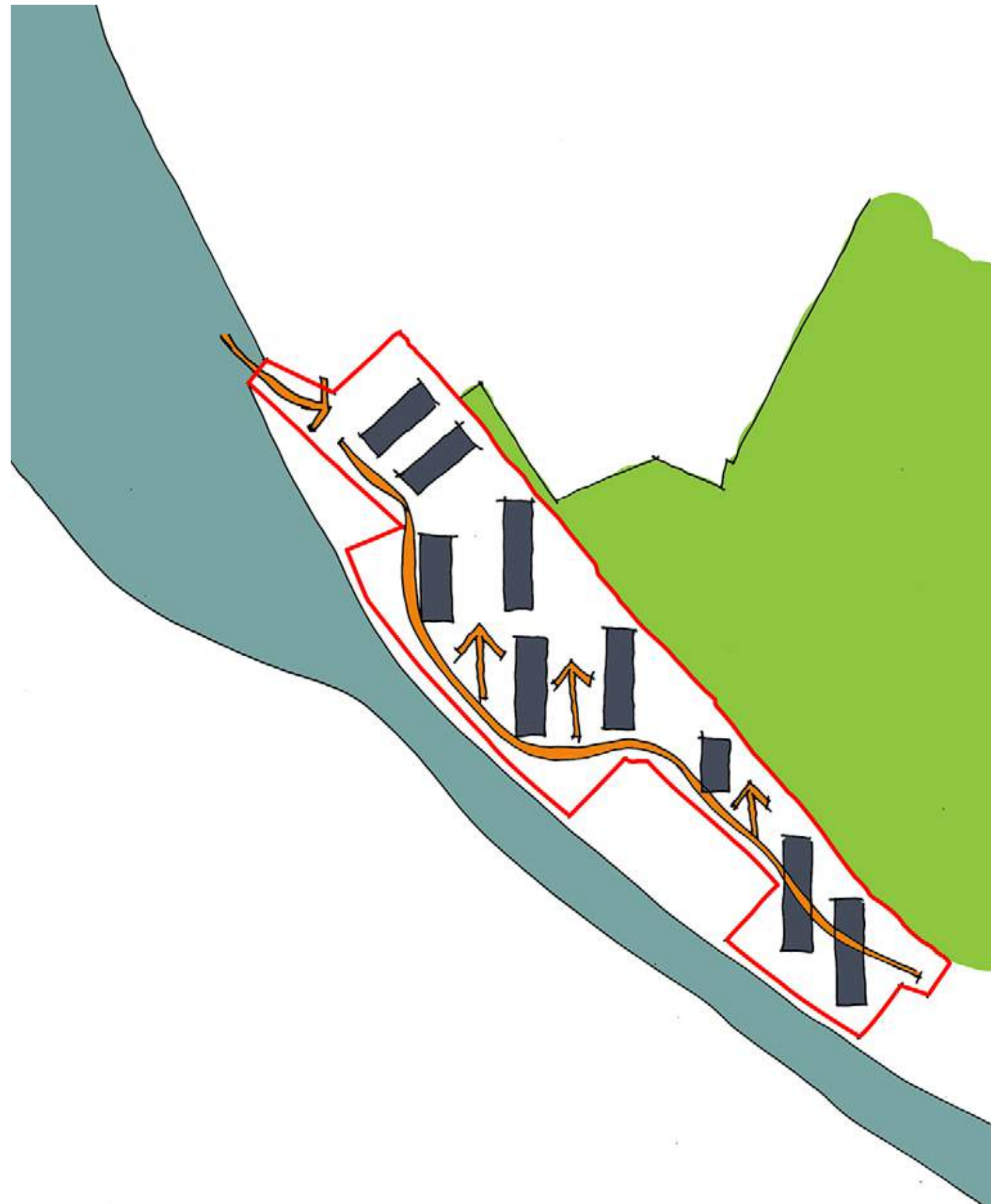
- Very efficient and effective layout for the redevelopment of this brown-field site;
- Optimum noise and vibration mitigation solution. Blocks can be positioned away from the railway line and angled so that a minimal habitable facade is exposed to the noise emanating boundary. The combined use of boundary acoustic screening and mechanical ventilation can provide additional mitigation;
- Optimum solution in striking a balance between the noise constraint and daylight / sunlight. The angled layout directly relates to the sun path ensuring that all blocks benefit from sunlight during daylight hours;
- All units benefit from dual aspect with both aspects benefitting from ample daylight;
- Undercroft parking can be used flexibly and effectively, avoiding a car parking dominated environment;
- Optimum outlook is achieved from all aspects, with the north-east elevations having views across green space and the north-west views looking across the site, but not directly towards the railway line;
- A positive design response due to much greater flexibility in design approach;
- An improved sense of place and community, offering effective use of a 'home zone' approach;
- Undercroft parking can be used in areas of flood risk with raised footpaths to facilitate means of escape.

## Negative

- Secondary outlook is more limited, however, still optimum;
- No potential for a vehicular through route, albeit to the benefit of the Home Zone.

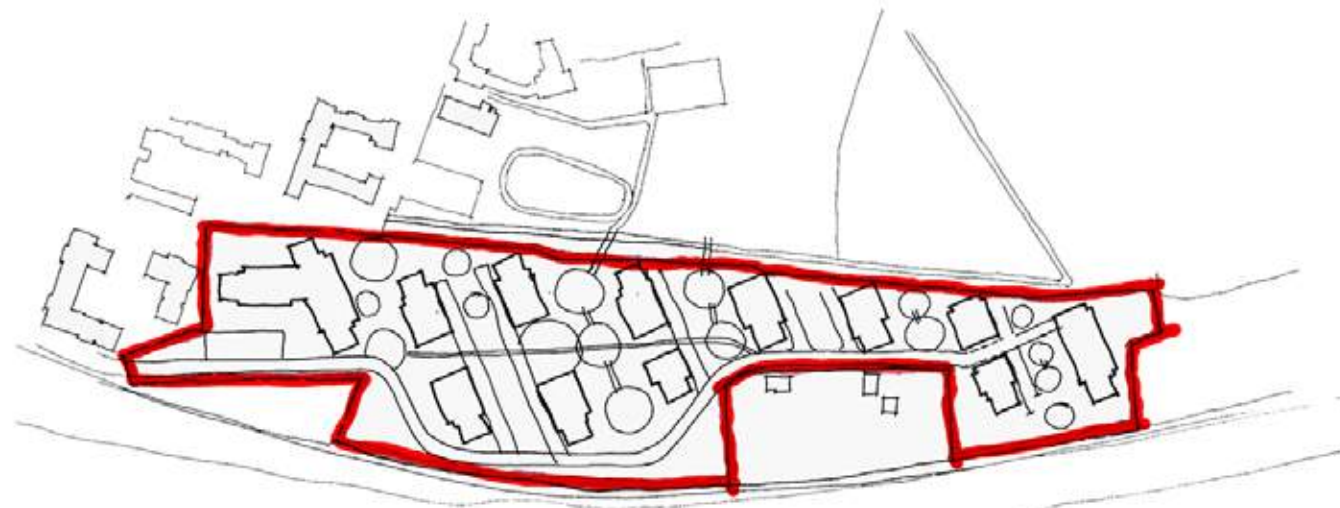
## Summary

Given the constraints identified in this document, this option is considered to achieve an optimum balance and is therefore the most effective layout for the site. The following sections of this document explore how this layout option has been further evolved to directly respond to the site constraints.



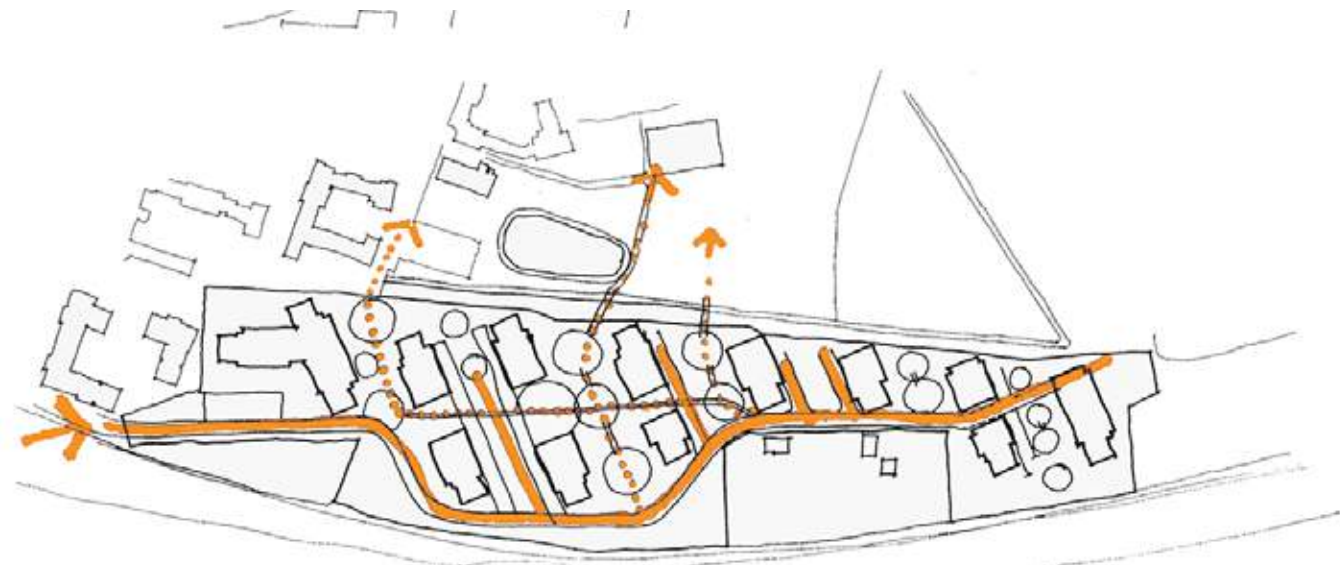


# 16 | Layout Evolution



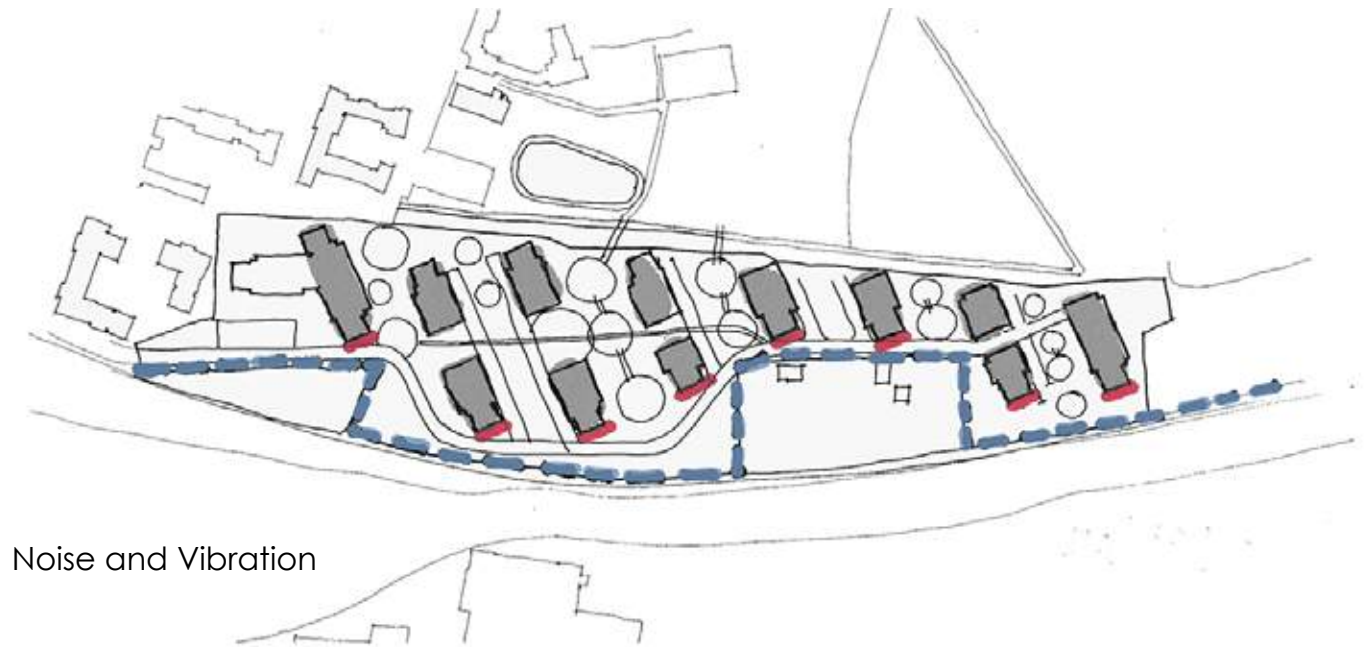
Site Boundary

**16.2** The impacts of noise and vibrations is clearly one of the most constraining features of the site. In particular, it has been necessary to achieve a layout which strikes a balance between appropriate mitigation and ensuring a high standard of living for future residents, particularly in regard to sunlight and daylight. The above sections demonstrate that a layout which is perpendicular to the railway line, thus leading to an oblique flanking relationship, minimises the impacts of noise and vibration without sacrificing outlook, aspect and natural light. The flank elevations would provide a fabric first acoustic barrier, allowing all other elevations to benefit from habitable room windows with good outlook and natural light. Mechanical ventilation would provide secondary mitigation. Ground floor areas including the external environment would be protected by acoustic measures placed along the railway line boundary, in the form of an earth bund and / or acoustic fencing and mature tree and hedge planting.



Access and Linkages

**16.1** The site ownership has naturally been the starting point for the design evolution. Natural land inclusions such as the triangular piece of land adjacent to the site access along the north-east boundary (owned by Industrial Steel & Cladding Ltd) and the rectangular parcel of land further down the site on the north-east boundary (owned by the National Grid) are not currently available. The perpendicular disbursed block layout approach allows for future extension into these sites using the same design response. This has been a very important sustainable design rationale for the layout from the outset, ensuring the development of land does not prejudice the future development.



Noise and Vibration

**16.3** A logical access arrangement has been to place the main access road along the south-west boundary, against the railway line, allowing the habitable accommodation to be situated on land furthest away from the noise and vibration emanator. This layout allows for smaller spur driveways to serve the parking areas for each block. In the interests of highways safety and to enhance the sense of place and community cohesion, it is envisaged that the site would adopt a 'Home Zone' approach.

**16.4** The pedestrian environment has been integral to the evolution of the layout, with a network of footpaths between managed communal green spaces creating an inviting environment with excellent natural surveillance and cohesion. Pedestrian links are also provided to the land to the north-east, linking both to the recreation ground and existing pedestrian footpath leading to the town centre.



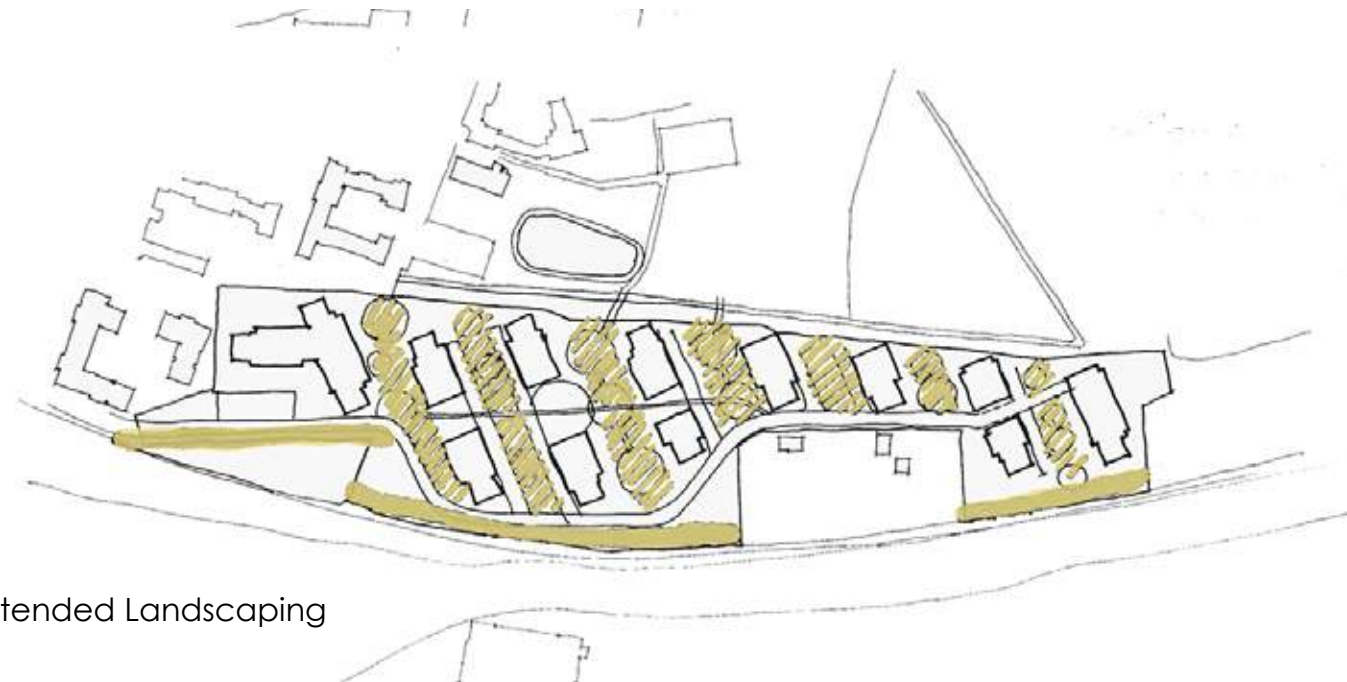
# 17 | Layout Evolution



Environment and Visual Amenity

**17.4** To complement the environmental quality of the site, the layout assumes some provision of undercroft parking to avoid external areas from becoming dominated by car parking. This allows more space for communal amenity areas, visual amenity areas and planting.

**17.5** Undercroft parking would be concentrated on the buildings positioned on the south-west side of the site in direct response to the flood zone constraints. Elsewhere, where possible, buildings will contain less undercroft parking pursuant of achieving active frontages. A balance must of course be maintained between this and avoiding car parking dominance.

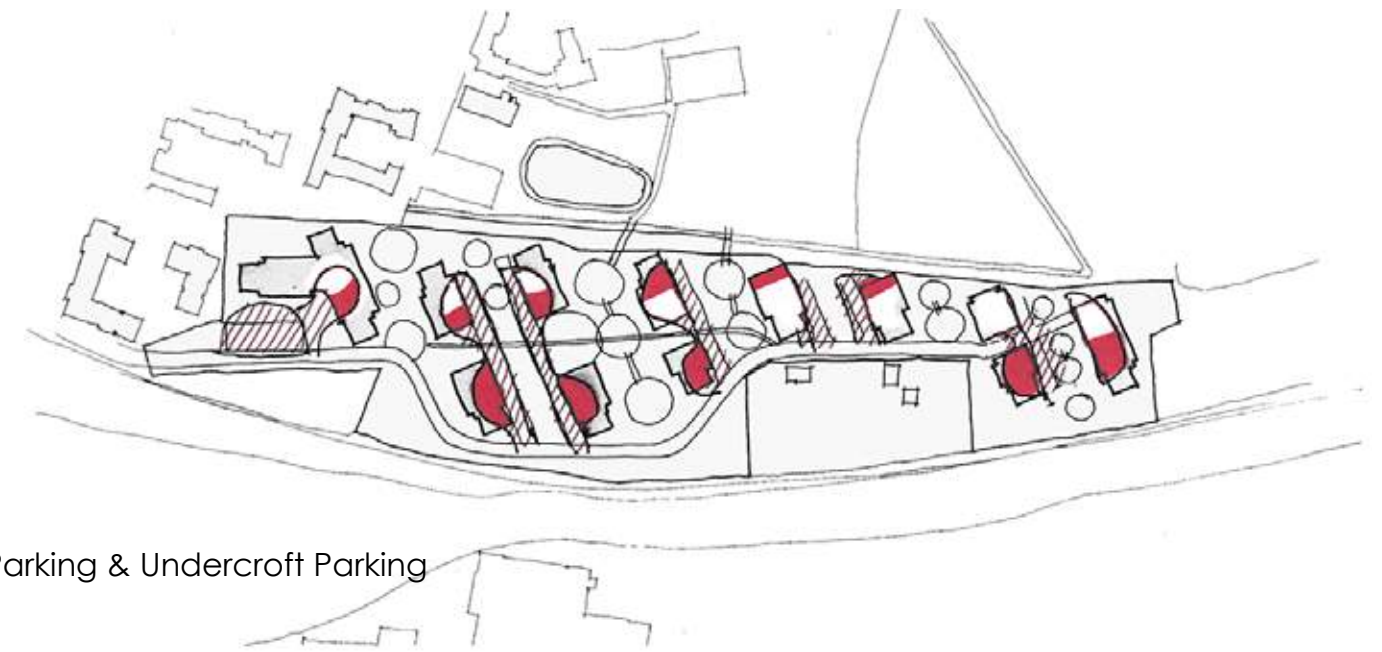


Intended Landscaping

**17.1** A key architectural aspiration for this site has been to remediate the contaminated brownfield land and provide an attractive green environment for residents with high quality communal spaces which create a sense of place and identity.

**17.2** The proposed layout allows for the new residential buildings to be almost entirely surrounded by landscaped and managed green spaces with considerable tree, shrub and hedge planting. Green areas would be linked via managed pedestrian pathways. The use of Home Zone principles allows for all new amenity areas to be connected safely and attractively, including play areas.

**17.3** The result would be an attractive environment for all and in particular provide attractive outlook across green spaces.



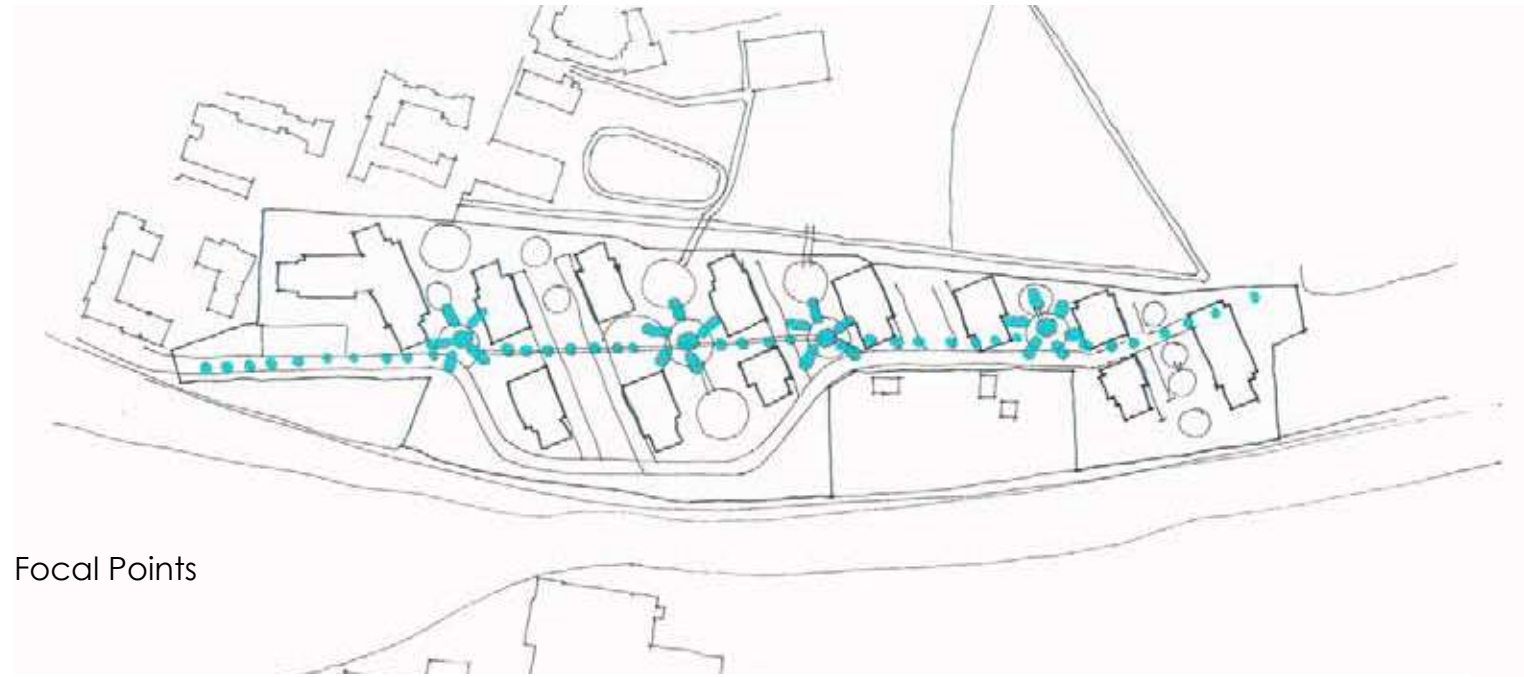
Parking & Undercroft Parking

**17.6** The layout offers excellent opportunities to maximise visual amenity spaces that will be finished and maintained as planted green space including lawned strips, flower beds, trees, shrubs and hedges. This will ensure a high quality and inviting place to live.



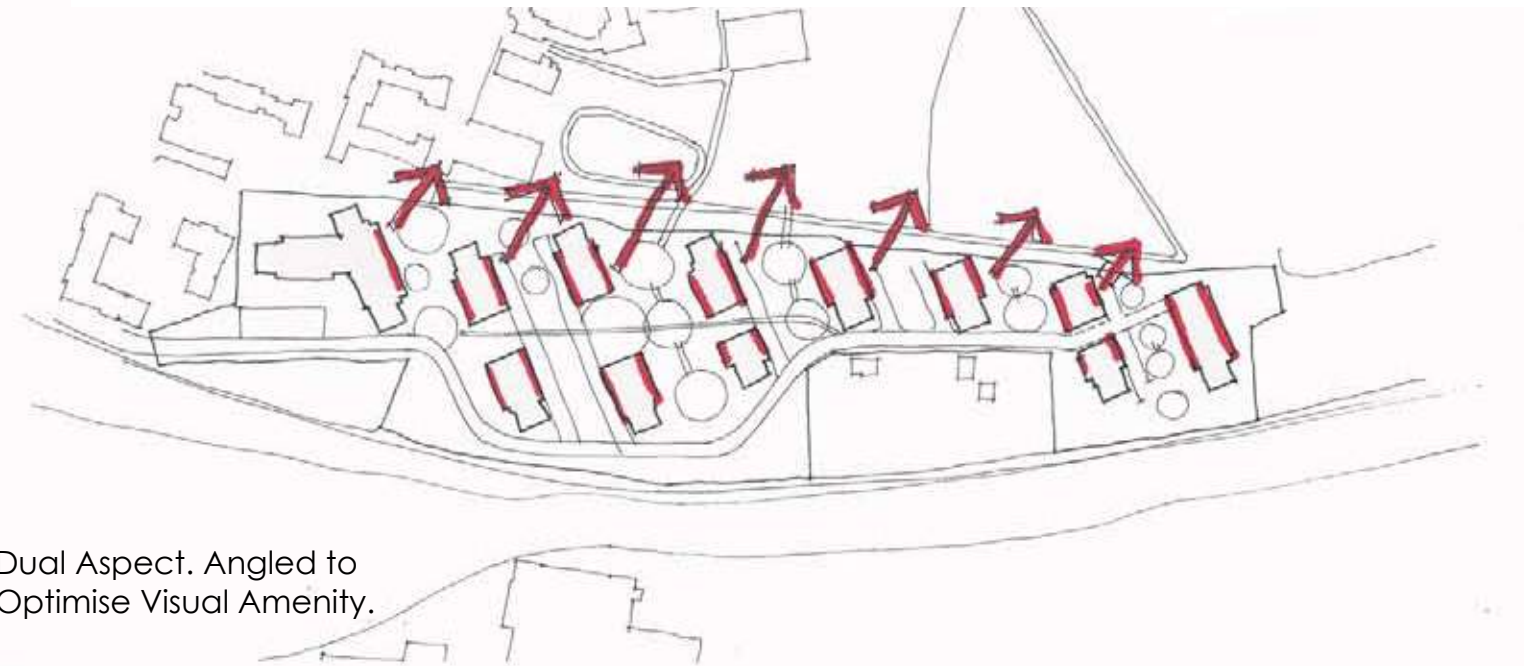
# 18 | Layout Evolution

**18.1** Creating a sense of place has been important to the evolution of the design. Key concepts of townscape have been relied upon to create good legibility through the site, with key nodes of focal points forming at managed communal areas. This adds to the level of cohesion and the sense of place created with the added benefit of increased security and passive surveillance.

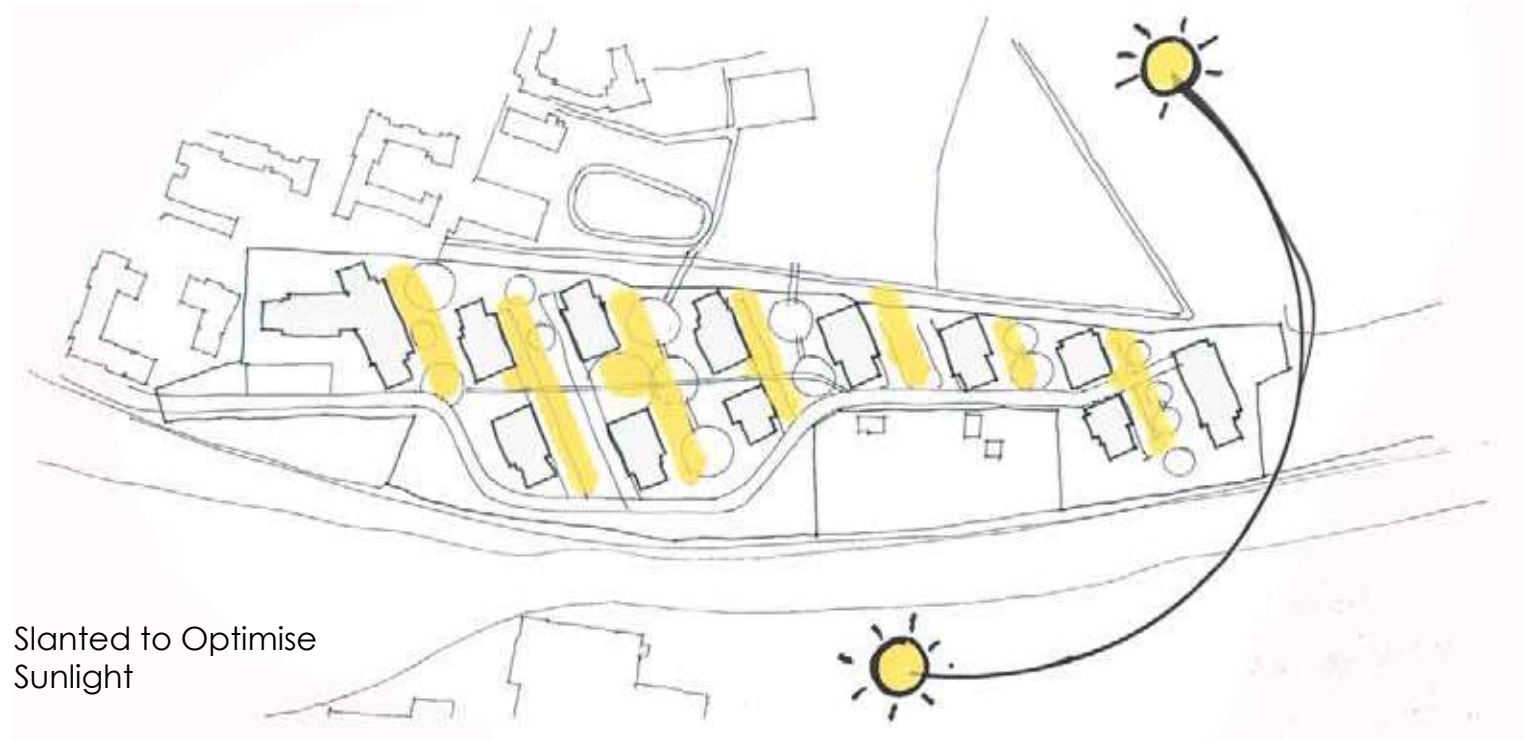


Focal Points

**18.2** The layout naturally encourages positive aspect towards open green spaces. The design has evolved so that rather than being entirely perpendicular to the railway, the buildings would be angled, providing views across the open land to the north-east. Furthermore, the building design has been developed to facilitate dual aspect for the residential units.



Dual Aspect. Angled to Optimise Visual Amenity.



Slanted to Optimise Sunlight

**18.3** As outlined in earlier sections of this report, a key parameter which has directed the evolution of the site layout into the form currently proposed is the need to balance noise mitigation with achieving sufficient levels of daylight and sunlight thereby ensuring sufficient quality of life for future residents. The layout strikes a balance between the need to mitigate against noise impacts and making the most of the natural sun path,

# 19 | Resultant Layout - Indicative Quantum and Mix



**19.1** This report explains how a detailed assessment of the constraints and opportunities of the site have directly informed the evolution of the design and therefore explain why the layout of development proposed is considered to be an entirely suitable solution for the site.

**19.2** Whilst only an Outline Planning Application, the scheme proposes in the region of approximately 200 units comprising almost exclusively 1 and 2 bed units. The rationale for an entirely flatted scheme of generally smaller units it explained in the earlier sections of this report.

**19.3** Given these findings, it has been necessary to undertake market research to ensure that there is sufficient local demand for 1 - 2 bed flats. Primary feedback from local estate agents including Anker and Partners, has revealed that there is significant local demand for flats of these sizes and resultantly the development would be deemed to result in highly saleable units. In particular, it has been identified that the site is located in close proximity to the town centre and train station that is particularly sought after by single people and couples.

**19.4** Notwithstanding this, it is noted that the precise housing mix and quantum will continue to evolve as the detailed design of the development proposals progress, however, this will be the subject of a Reserved Matters application.

## Indicative Accommodation Schedule:

92No. 2 Bed flat @70m<sup>2</sup>/ 753sqft  
35No. 2 Bed flat @62m<sup>2</sup>/ 667sqft

61No. 1 Bed flat @51m<sup>2</sup>/ 548sqft

12 No. Studio flat @37m<sup>2</sup>/ 398sqft

**TOTAL 200No. Flats**