





3. Constraints & Opportunities

3.1. Constraints and Opportunities

As with any development, it is crucial that a thorough understanding of the site is obtained. This understanding then has to be balanced with the proposed uses. Following the undertaking of these processes, the opportunities for the site and subsequent realisation of the overall vision is achieved.

Constraints

By analysing the site information and reflecting on potential uses, the following items are considered as the primary constraints for the site:

1. Topography

There are significant changes in level across the site from south to north, which mean that the introduction of any building accommodation can be challenging. This constraint means careful consideration must be given to the location of any building.

2. Highways and Access

Any buildings must have a clear and logical access that relates well to the existing and consented highways infrastructure.

3. Connectivity and adaptation of consented Langarth masterplan.

4. Visual Impact and Relationship to Existing Landscape

The visual impact of any development should be considered. Due to the topography and relationship to the open countryside to the west, consideration needs to be given to these important views.

5. High Pressure Gas Main

The high pressure gas main (HPGM) that runs through the site is a major constraint on development.

6. Ecology

Careful consideration must be given to the existing environment and species on the site. Where possible, the existing biodiversity must be sustained and enhanced.

Opportunities

Based on the constraints of the site and content of development, the following design opportunities exist:

1. District Centre

The creation of a district centre with a mixed used activity facing away from open countryside and towards the consented Langarth masterplan.

2. Mixed Uses with Strong Relationship to Housing and Wider Residential Community

A mix of uses that centre around a central hub with strong physical connections to the consented Langarth residential masterplan and new stadium.

3. Location of Larger Buildings

Larger buildings should be located on 'flatter land' towards the northern boundary. This will reduce the visual impact and improve the viability. Opportunities for 'green roofs' that minimise the visual impact of the larger buildings should be considered and roof pitches that follow the existing natural topography of site will help reduce visual impact further.

4. Screening of Food Store Service Yard

A secure service area that is covered and screened when viewed from west should be considered. This is an important aspect of the development and must be detailed appropriately. Light spill and acoustic issues will need to be addressed to overcome the environmental challenges in this location.

5. Public Open Space

The provision of a variety of public open spaces for different activities that relate well to the consented masterplan, additional residential accommodation and new district centre. Due to the proximity of the site to open countryside, the provision of larger areas of public open space can be used as a buffer for the development.

6. Housing that Adopts the Language of the Consented Masterplan

As the landscape characteristics of the site are similar to the consented masterplan, well connected housing that has a consistent and established language can be adopted. Due to the topography of the site this housing will provide interest to the wider landscape.

7. Green and Routes and Corridors

Strong urban design principles have been used for the wider consented masterplan. These principles and connectivity strategies can be adopted to help the connectivity of the site. These strategies include the new link road and pedestrian green routes that run east to west through the consented masterplan.



Key

--- Site Boundary

Images:

Opposite page: Site Plan showing the Topography 1:2500 @ A3



3.2. Landscape Features

Topography and Landscape Features

The A390 runs on a higher plateau area whilst the adjacent land falls away to the north down to a stream that runs along the valley bottom.

The majority of the site is clear of vegetation. The majority of the site's perimeter and internal boundaries (with the exception of much of the northern boundary) consist of Cornish hedges.

The vegetation on the Cornish hedges varies between sections, some having low scrub and grasses no more than 1m above the earth and stone construction while some have shrubs and broadleaved trees up to approximately 20m in height.

A narrow, shallow stream runs beyond the northern boundary of the site, eastwards along the wooded valley bottom. Drainage ditches are found on the site running along the northern edges of the fields adjacent to the stream and along the northern part of the far eastern boundary.



Images:

1. Photograph from the lowest part of the site, looking towards the main road
 2. Photograph showing the steep topography of the site
- Opposite page: Bird's eye view photograph showing the extent of the site



LANGARTH

TRURO

THREEMILESTONE

A309

stream along the valley floor

large change in level

prominent hedgerows



3.3. Gradients and Geology

Gradients

Several areas are steeply sloping, with some significant areas at gradients steeper than 1 in 8. The steeper levels in some areas present a significant constraint to the development.

The highest point on site is in the south-eastern corner at approximately 64m AOD, falling to around 31m AOD in the south-eastern corner. The lowest points are along the northern valley, at approximately 31 AOD.

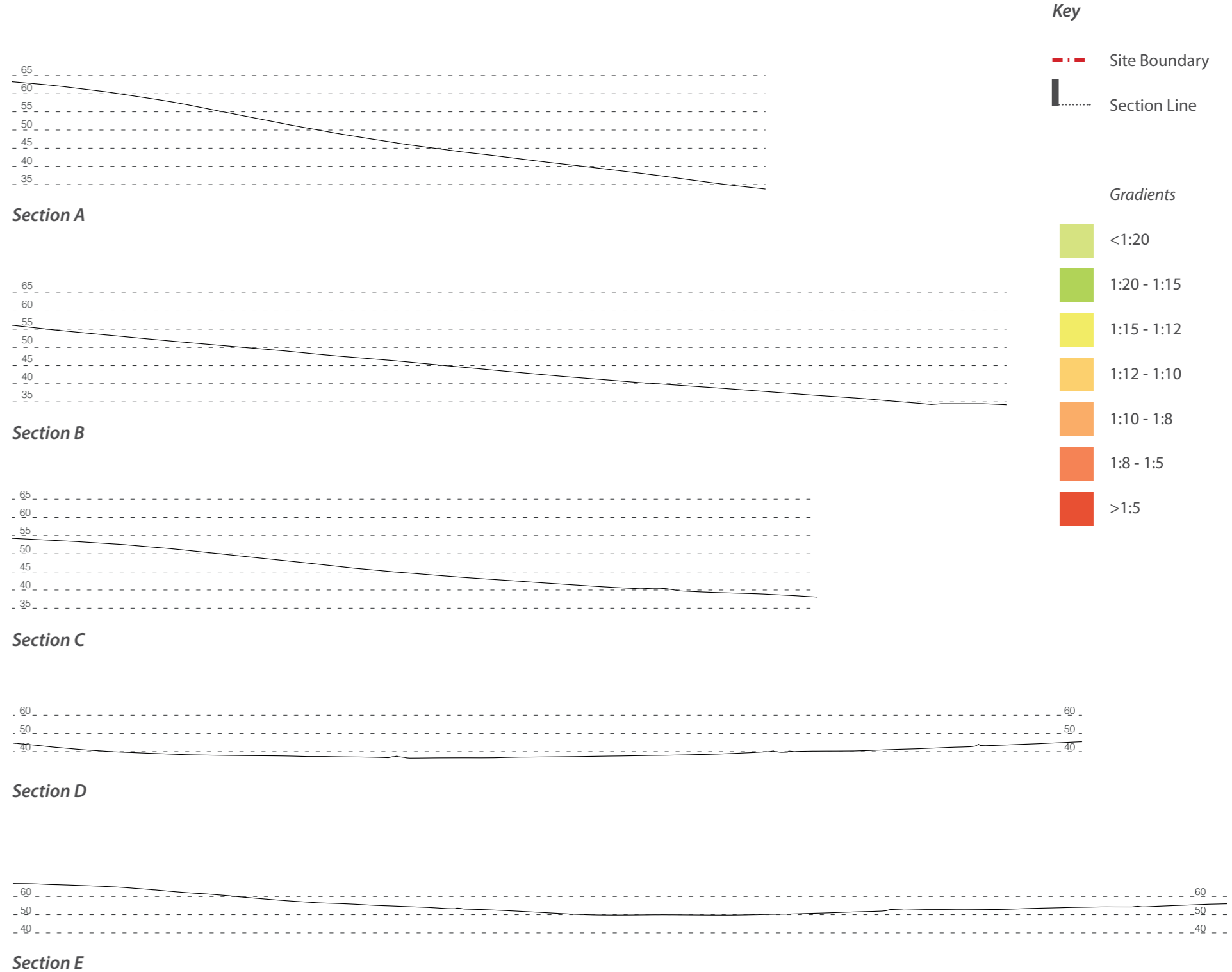
The significant changes in level across the site from south to north mean that the introduction of any building accommodation can be challenging. This constraint means careful consideration must be given to the location of any building. Because of this constraint, it is clear that buildings and associated landscaping should ideally follow and have minimal impact on the landscape.

Not only does the siting of any building need to be considered carefully but so does any public open space. Public open space must be easily accessible, appropriate for use and relate well to its surroundings.

Geology

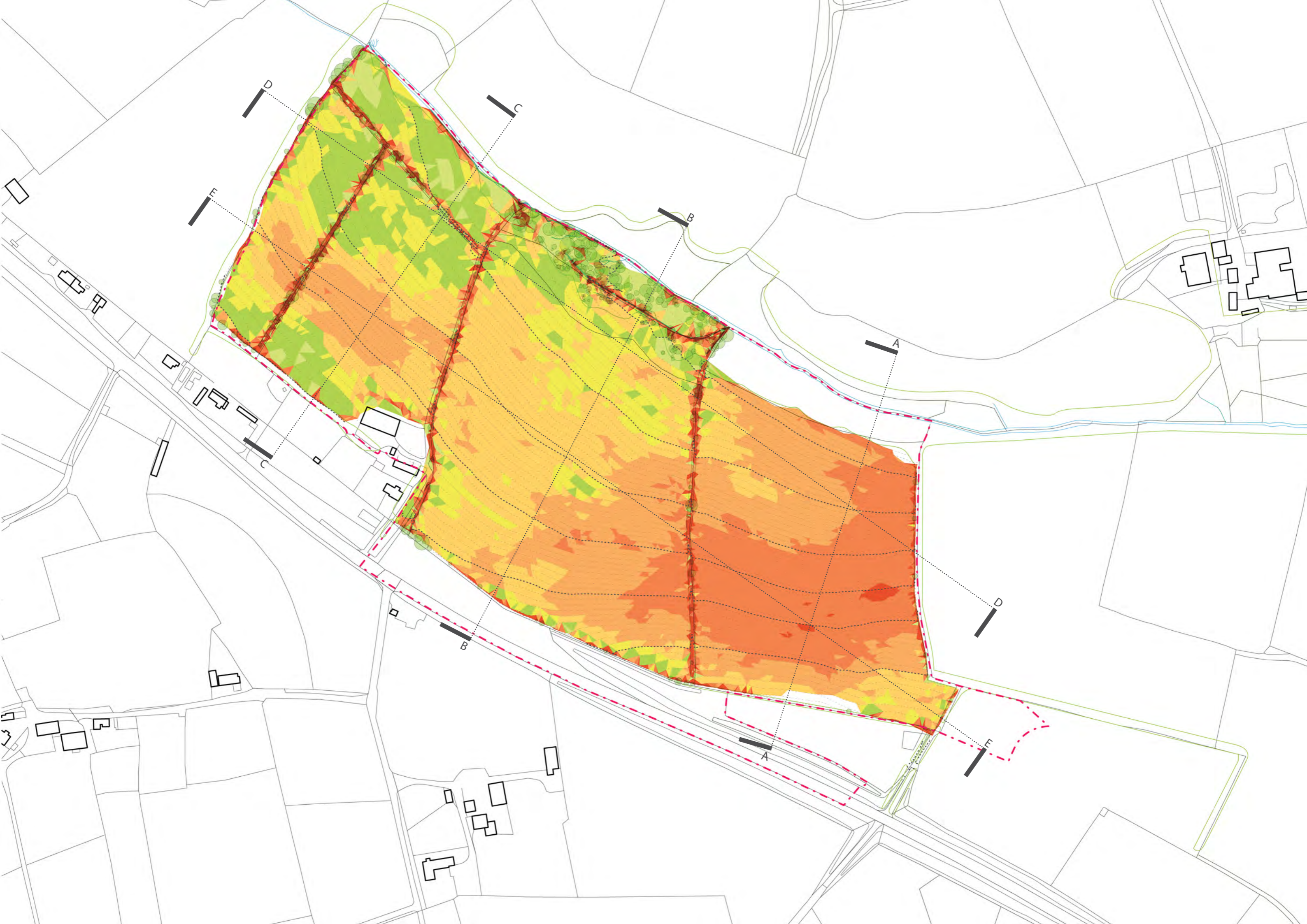
According to the British Geological Survey (BGS) Map of the area (Sheet 352), the site is shown to be underlain by the solid geology of the Porthtowan Formation, described by the BGS as interbedded slaty mudstone and sandstone. Superficial deposits comprising Alluvium are shown along the northern boundary of the site associated with the tributary of the River Kenwyn, the deposits are described by the BGS as clay, silt, sand and gravel.

The Porthtowan Formation and the Alluvium have been designated as a Secondary A Aquifers by the Environment Agency. These are described as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers. The site is not located within a Groundwater Source Protection Zone as classified by the Environment Agency.



Images:
Sections A-E showing the topography of the site
Opposite page: Gradient plan 1:2500 @ A3





3.4. Visual Impact and Relationship to Landscape

The visual impact of any development should be considered. Due to the topography and relationship to the open countryside to the west, consideration needs to be given to these important views. Due to the change in level, any development that sits at the southern edge of the site will be seen from further away than any development towards the lower northern parts. Furthermore if development is placed at the higher level, the building form is more likely to have an increased adverse impact on the wider landscape. This is an issue particularly for larger built forms.

If buildings are positioned towards the north of the site (and therefore at a lower level), the overall visual impact of the buildings become less significant (as they begin to 'sit in the valley'), however more consideration must be given to the roof form, finish and detail as this aspect can become more visible (as the viewer is more elevated and potentially 'looking down' on the building).

It is important that when the development is viewed from the open countryside from the west and north that the impact is minimized.

Paradoxically the appearance and impact of retail development often has the requirement 'to be seen' especially from the main approach and highway. This relates especially to the views from the south and south east.

Based on these two 'conflicting' visual requirements, it is clear that a building that 'looks east and south' towards the A390 and the consented Langarth masterplan and stadium is preferable. This arrangement would put its back towards the open landscape which can then be 'screened' and ideally blend into the landscape to the west.

Landscape Visual Effects

A Landscape and Visual Impact Appraisal (LVIA) of the site has been carried out as part of an iterative design process by FPCR Environment and Design. The LVIA considered the potential effects of the development upon:

- Individual landscape features and elements
- Landscape character
- Visual amenity and the people who view the landscape.

The West Langarth site lies approximately 6km to the west of the centre of Truro and immediately north of the Threemilestone area. The A390 runs south of the site forming a major transport corridor into Truro. The site extends to 14.4 hectares and comprises of five fields currently in agricultural use. The local landform is formed of gently rolling hills and river valley with the site itself is located on sloping land between approximately 75m AOD and 105m AOD.

The landscape is medium in scale, with a range of fields under arable and pasture. The fields are mostly regular in shape and enclosed by hedgerows, which are mostly in poor condition. Trees are located along the northern boundary.

Overall, the landscape and visual effects are considered to be predominantly localised and contained. Whilst there would be some adverse landscape and visual effects at the outset on account of the permanent loss of the fields and the change from agriculture to urban development, it is judged that these adverse effects would be localised, being limited to the site and the immediate surrounding landscape.

Effects would reduce in the longer term on account of the maturing green infrastructure framework, which would provide a net gain in habitats and accessible green space. The overall landscape and visual effects at Year 15 are judged to 'minor adverse'. It is considered that the site's landscape character has the ability in which to absorb urban development of the scale and type proposed without causing any unacceptable landscape and visual harm.

Images:

Opposite page: Photographs of the site from across the valley.



3.5. Ecology

Careful consideration must be given to the existing ecology and nature conservation of the site and where possible the existing biodiversity retained and enhanced.

Existing habitats have been assessed in respect of their ecology and nature conservation value, and summarised below and discussed in further detail within the Ecological Appraisal, FPCR, August 2014.

Habitats and Flora

An extended Phase 1 Habitat Survey and updated following subsequent visits to the site identified a number of Cornwall Biodiversity Action Plan (BAP) habitats and NERC S41 habitats of principal importance including wet woodland, hedgerows, rush pasture (wet grassland), rivers and arable field margins. Of these, of most importance were those riparian habitats associated with Langarth Stream on the northern boundary and the hedgerows that formed field boundaries across the site.

Arable fields themselves were considered of low nature conservation value providing only some limited value for several months over winter (foraging for seed eating birds and loafing to wintering flocks). No rare or notable arable weeds were recorded however it is acknowledged that locally, arable habitat does support some notable weed species. Other notable plant species recorded on site include the nationally scarce balm-leaved figwort *Scrophularia scorodonia* and wavy St John's Wort *Hypericum undulatum*, the former limited to several small stands on the southern boundary and the latter confined to rush pasture and wet grassland associated with Langarth Stream to the north.

Fauna

Bats

Seven of the eighteen accepted species of UK bats regularly use hedgerows and habitats associated with Langarth Stream for foraging and commuting between roosts and prime foraging grounds. No roosting bats were present within any of the agricultural buildings within the site and no trees suitable for the support of bat roosts were identified.

Reptiles

Grass snake *Natrix natrix* have been observed during surveys undertaken in 2014 and it is likely given the location where these were observed that

populations are restricted to habitat associated with Langarth Stream although hedgebanks across the site have the potential to be used for hibernation. Grass snake were not recorded anywhere else on site and nor were any other species of British reptile although the hedgebanks do offer potentially suitable habitat.

Otter

Otter *Lutra lutra* sightings were observed along the Langarth Stream during the initial extended Phase 1 Habitat Survey, 2014 but no areas of resting or breeding were confirmed. Given the suitability of habitats along the whole of the Langarth Stream corridor on this northern boundary and previous records associated with the adjacent Langarth scheme the use of the site by otter is confirmed.

Badgers

No evidence of current use of the site by badgers was recorded during the initial Extended Phase 1 Habitat survey or following subsequent visits to site. No evidence of activity was recorded in association with the disused outlier sett in the northeast of the site previously identified through surveys work undertaken for the adjacent Langarth scheme in 2011. No territorial boundary was identified on site so hedgerows may still provide foraging and resting places for local badger populations.

Birds

Hedgerows provide opportunities for breeding birds and provide winter foraging resources to wintering birds, in addition to the foraging and loafing ground provided by the arable fields over winter months. Langarth Stream and associated habitat corridor also provides foraging and nesting resources to breeding birds. Wood lark, are known from arable habitat locally and although the birds have a strong affinity to fields or small areas within fields, there is potential for arable fields on site to be utilised by the species. None have been recorded on site to date and specific surveys for wood lark are scheduled for winter 2014.

Other species

Generally, arable fields offer little or no interest to invertebrates however the hedgebanks provide habitat of greater value to invertebrate groups. The habitats of greatest potential invertebrate interest are those associated with

the Langarth Stream corridor in the north of the site that will not be lost to facilitate proposals.

No evidence of dormice has been recorded on site and extensive surveys of surrounding farmland undertaken for the adjacent Langarth scheme in 2011 concluded the species likely absent.

No evidence of harvest mice has been recorded on site and extensive surveys of surrounding farmland undertaken for the adjacent Langarth scheme in 2011 concluded the species likely absent (although there are difficulties in surveying for this species). Restricted field margins across the site provide only suboptimal habitat for harvest mice.

3.6. Acoustics

The proposed development is intended for mixed uses including residential dwellings and retail. There are both existing and proposed noise sources and sensitive receptors to consider in relation to noise.

Existing noise sources have been identified and will include road traffic on the A390 and local roads, Truro aerodrome and wind turbines at Four Burrows and other wind farms. Proposed noise sources will include operational noise from the supermarket such as fixed plant, deliveries and car parking. There is also potential for noise impact from the proposed sports fields.

A survey methodology has been agreed with Cornwall Council to quantify baseline conditions in terms of noise across the site. This will serve to inform the noise impact assessment. It includes both attended short term and unattended long term noise monitoring so as to acquire appropriate data for analysis.

The suitability of the proposed development site for residential use will be assessed against national, regional and local policy. Preservation of amenity will also be assessed for the existing local residents. The assessment will consider the cumulative impact of the proposed development in conjunction with other known development scheme in the environs. It will also determine what if any mitigation measures might be required to ensure the amenity of all noise sensitive receptors.

3.7. Highways and Access

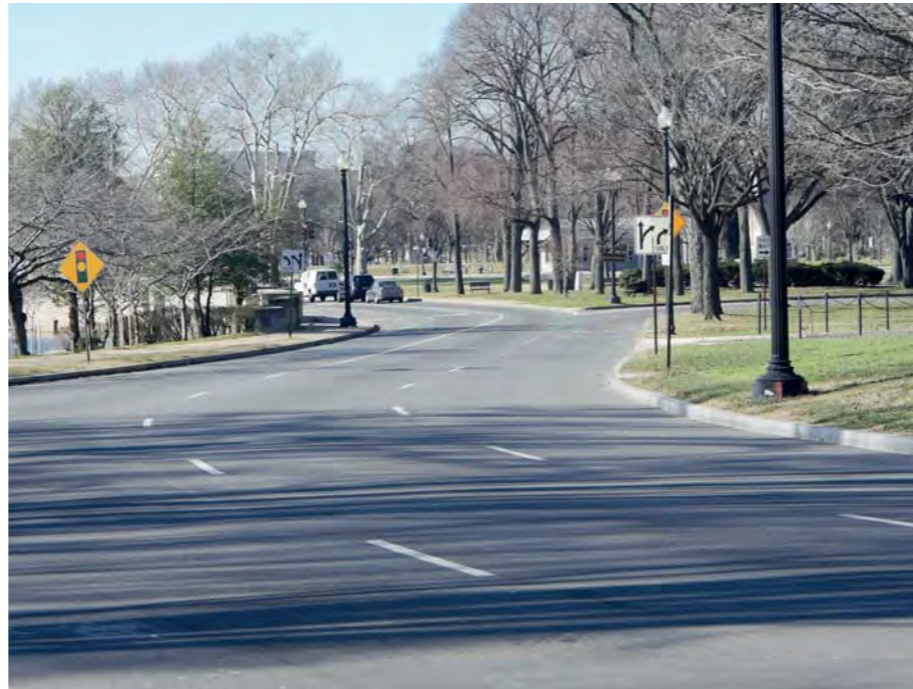
Accessibility from the A390 needs to be well designed and provide a strong connection to any proposed uses for the site as well as providing a good connection to the consented distributor road of the consented Langarth masterplan. Because of the levels and the associated anticipated quantum of vehicles for the site, good and safe pedestrian links are crucial.

New Junction and Core Road

The application site does not benefit from an existing formal means of access. As part of the development it is proposed to construct a new three-arm traffic light controlled junction onto the A390, broadly following the design-cues of the consented Langarth access. In consideration of the function of the A390 and the proximity of the two junctions, it is proposed that each will work in combination with the other in order to throttle capacity of the downstream junction and minimise delay.

Bus Service

As a commitment of the Langarth planning permission, the existing #88 bus service will be diverted from the A390 to service the permitted development. As part of this proposal, the #88 service is proposed to be further extended to the application site where passengers will board/alight at a dedicated bus drop-off area that will be integrated within an area of high quality public realm. This would be located at the heart of the development, between the proposed retail and restaurant/café land-uses. The bus service would re-join its intended path via the proposed internal road that will connect onto the NAR within the Langarth development



Key

- · - Site Boundary
- Existing A390
- Proposed junction alterations

Images:

Opposite page: Access plan 1:2500 @ A3





3.8. High Pressure Gas Main

The high pressure gas main (HPGM) that runs through the site is a major constraint on development. If the HPGM is not adjusted, an easement with no development either side of between 60 and 70 metres is required. This clearly affects the viability of development for the site and uses approximately 4 hectares of land.

To overcome this challenge the HPGM can be reinforced. This is costly but viable if the correct commercial uses are adopted for the site. As the HPGM needs to be replaced, it can be relocated to a more appropriate location that can work with the layout and wider masterplan.

The proposed reinforced HPGM does require an easement however this is significantly reduced to 3 metres either side of the pipe.



Key

--- Site Boundary

Utilities

High Pressure Gas Mains

70m Offset

Area that cannot be developed

Images:

Opposite page: Gas mains constraints plan 1:2500 @ A3





70m offset

70m offset

3.9. Integration with Langarth Masterplan








The design strategy for the residential accommodation and connectivity has been studied and should be integrated in to the design proposals.

A residential design solution that embraces the landscape character and enhances the environment has been adopted for the Langarth masterplan.

As the width and topography of the site is similar to the consented Langarth scheme, a residential strategy that extends west into the application site could be considered. This strategy would be improved by the provision of attractive public open space between the two sites.



Key

-  Site Boundary
-  Langarth Boundary
-  Proposed Residential Development
-  Proposed Main Access into Site
-  Vehicular Connection to Langarth
-  Green Route Connection to Langarth
-  Existing A390

Images:

Opposite page: Plan showing connection to Langarth masterplan 1:2500





Upper Langarth

Employment Gateway





4. Design Development & Preferred Layout

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4.1. Use and Content

The following uses and amount are proposed for the site:

Building use	sqf	sqm
Food Store	60000	5574
Comparison Retail (minimum unit size 10ksk)	50000	4645
Food and Beverage	10000	929
Sports facilities	5382	500
Parking	650 spaces	
Apartments and Housing	130 units	

The quantum of development has been determined by communicating with potential operators. A number of factors including location, access, demographics, local and wider economy drive the amount of development. The provision indicated has been optimised to ensure viability is maintained.

The balance of uses will ensure there is an attractive enabling development that will be vibrant and sustainable.

Design Development

The location of the food store and associated comparison retail has been considered in detail. The relationship of this element to the other content of the application (housing and public open space, etc.) and wider consented masterplan for Langarth has also been investigated.

A number of layouts were considered for the site.

The basis of the various layouts were initially driven by the arrangement of the retail content for the site. The reasons for this were as follows:

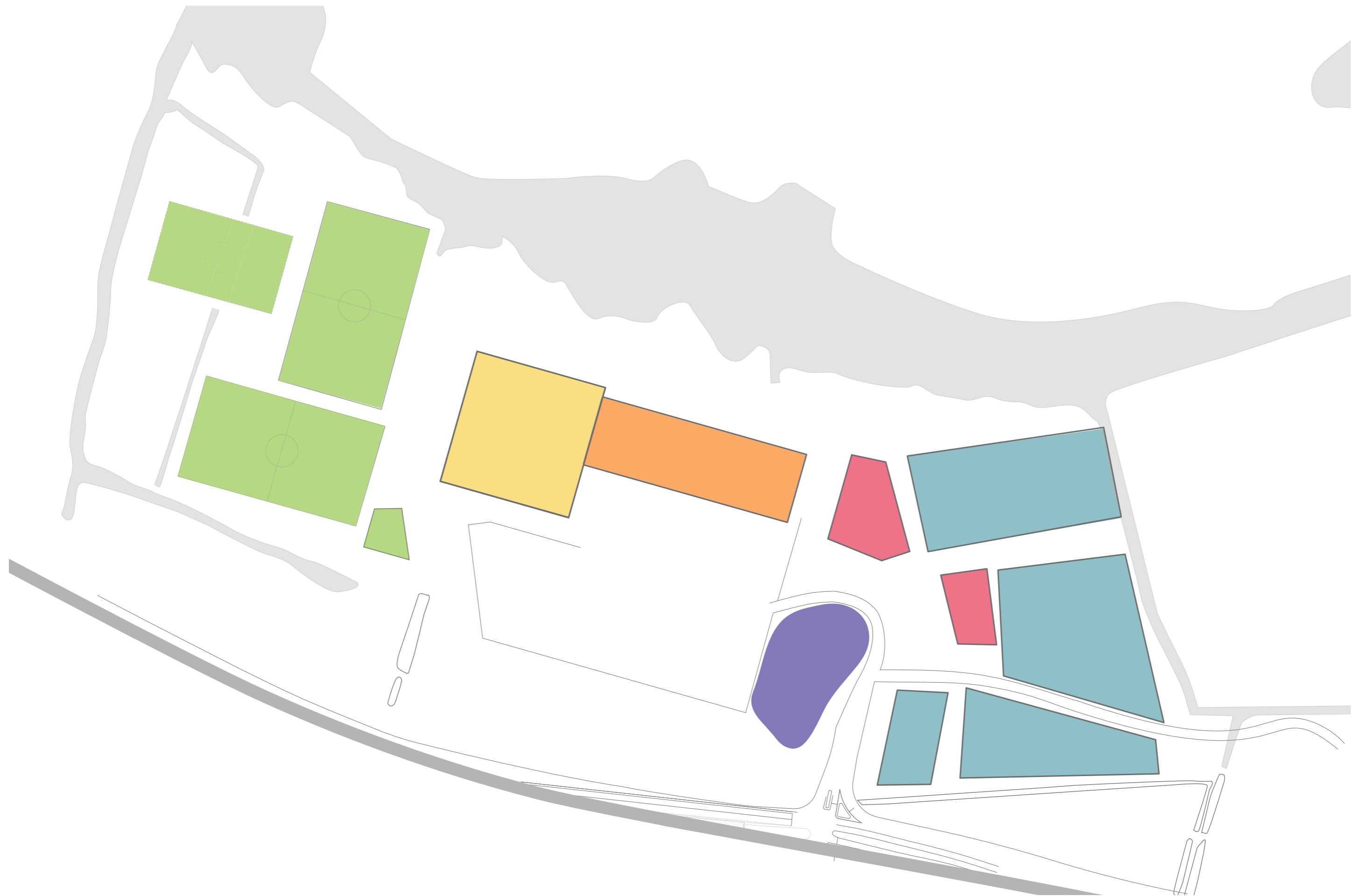
1. It was necessary to ensure that the main commercial drivers are optimised. This ensures that the viability is maintained and a maximum capital receipt is delivered for the realisation of the stadium at the heart of the consented masterplan.
2. The operational factors such as access, highways and deliveries are significant for a food store and the associated impact must be considered and resolved.
3. The food store and associated car parking has the largest footprint on the site.

Key

- Food Store
- Comparison Retail
- Food & Beverage / Mixed Use
- Sports Facilities
- Residential
- Petrol Filling Station

Images:

Opposite page: Uses Plan 1:2000 @ A3



4.1. Use and Content

4.1.1. Food Store

The food store is the key commercial driver for the development. Based on this requirement, it is vital that an appropriate food store layout is provided.

The following design aspects are required for a food store:

- Good connectivity and visibility for main public highway.
- Easy and attractive pedestrian access for customers. This includes the relationship of the building to the vehicular entrance, ease of parking, access from parking to the food store entrance (with a trolley) and logical orientation within the store. It is crucial that these factors are continually addressed as the scheme develops.
- Sales floor area. This area must be logically arranged, functional and flexible for future adaptations of the food store as retail demand adapt. Typically a sales floor area will have a rectilinear footprint ratio (width/depth) of approximately 1/1.5.

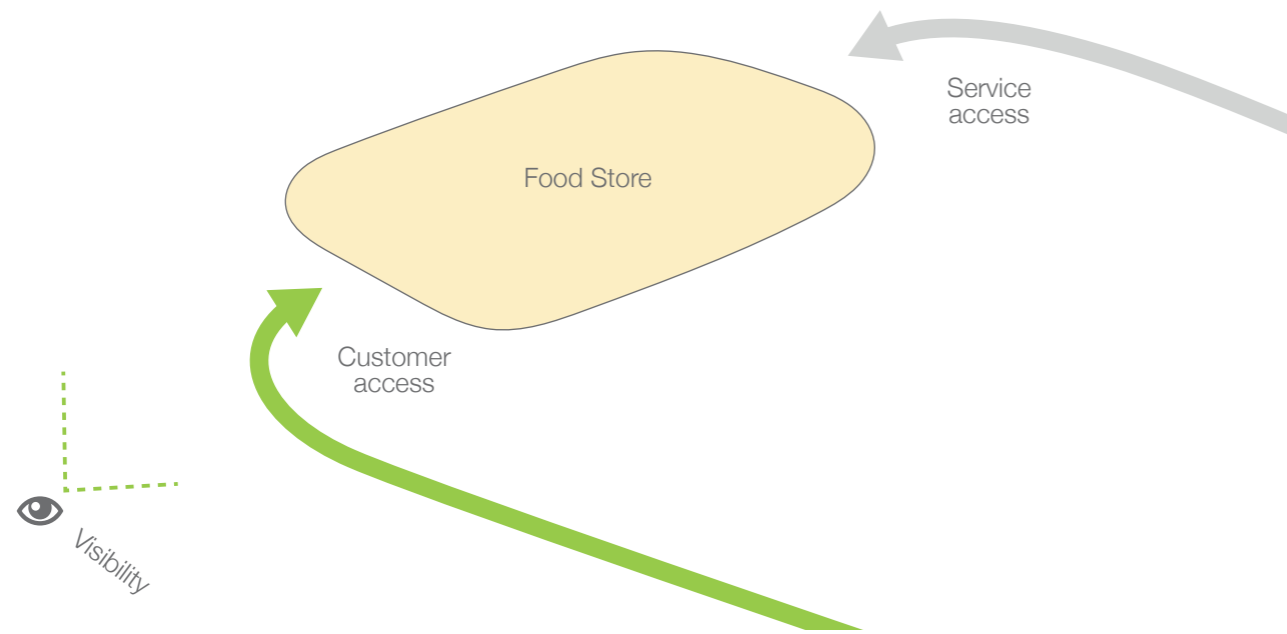
- Suitable and sufficient parking. Food store operators need the maximum amount of policy compliant parking. The proposals indicate a provision of 1 space per 14 square metres GEA (Gross External Area). This parking needs to be logical and within one defined area.
- Safe, secure and dedicated servicing. Providing the correct amount of space for articulated vehicles to manoeuvre safely is important. There are other aspects such as refuse and storage that must be considered in this area of a food store.
- Appropriate branding and signage that complies with the corporate brand.
- Typically food stores need a clear internal floor to ceiling dimension of approximately 5 metres. The resultant building height is typically around 7 metres. Occasionally food stores have mezzanines.

Based on these requirements the most appropriate location on the site is the flattest and accessible.

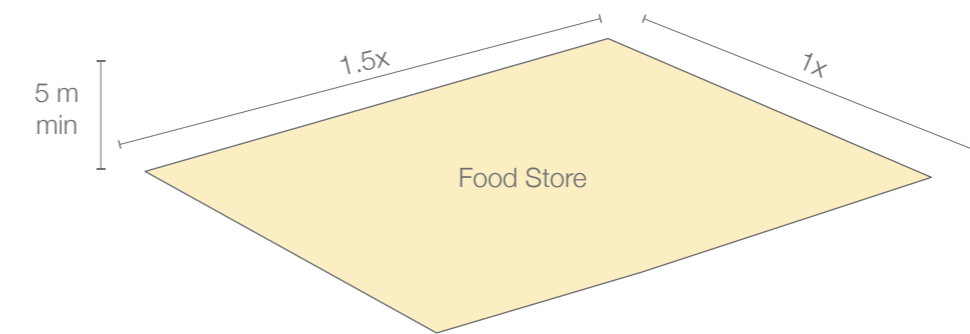
Images:

Opposite page: Diagram showing how a food store works

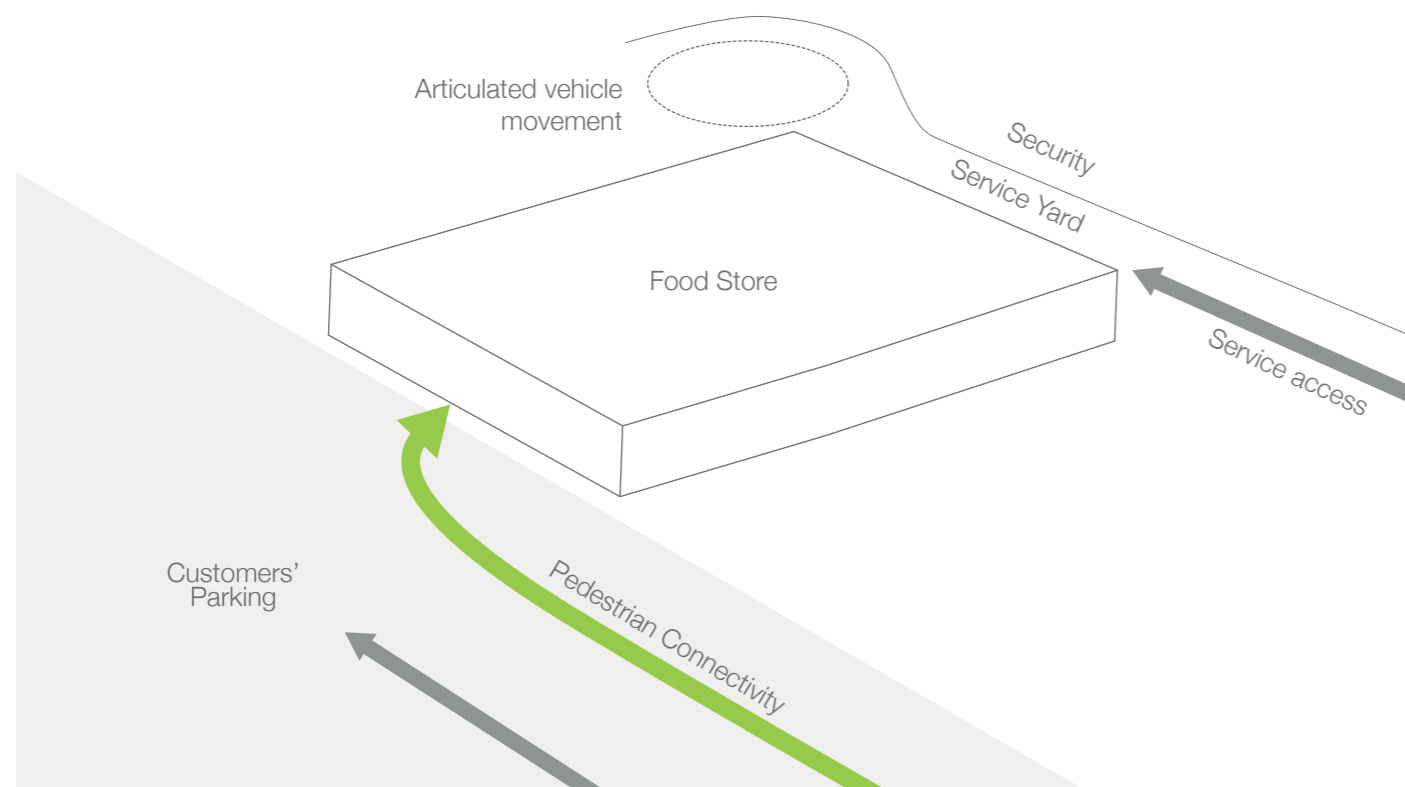
1 Access



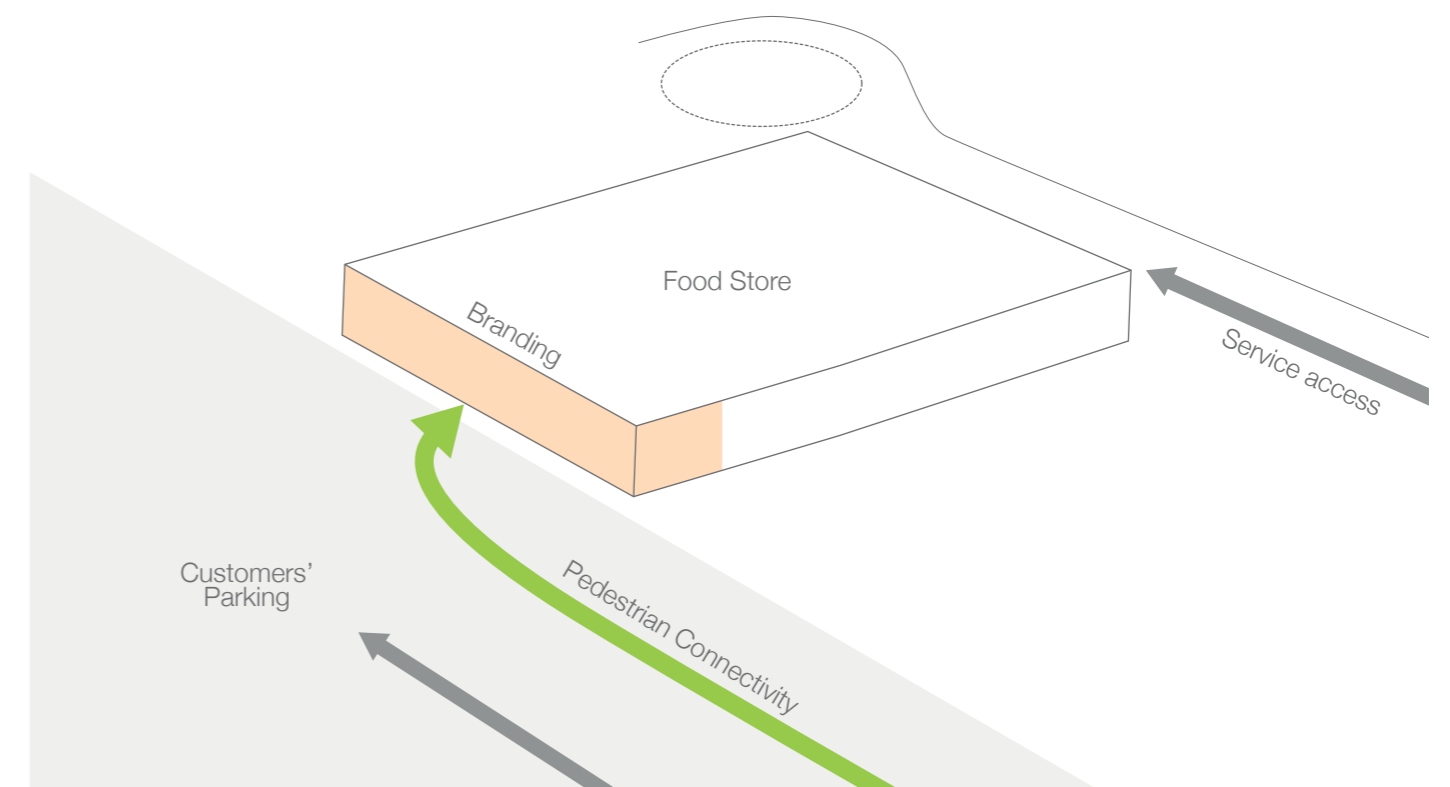
2 Size, proportion and flexibility



3 Servicing



4 Branding



4.2. Socio-Economic Assessment

The planning application will result in significant social and economic benefits for the local area and wider Truro. The proposals will also facilitate the stadium proposal on the adjacent site, which will result in further social, economic and cultural benefits for the whole of Cornwall.

Commercial Development

The application proposes the creation of the western district centre, providing new retail and commercial leisure development serving Threemilestone and the wider Truro area.

The proposed development will serve the retail 'need' identified in the Cornwall Retail Study and will provide residents in Threemilestone and surrounding areas with an enhanced choice of retail provision. This will result in the retention of a greater amount of retail expenditure locally with the associated economic benefits as well as the sustainability gains through reduced journeys.

The proposed development will relieve the pressure on existing shops and centres in Truro, which are currently 'overtrading', resulting in an improved retailing environment. In addition, the current overtrading of the current stores and centres means that trade diversion to the proposed development from the city centre is not considered to be significantly adverse. Finally, the development will not prejudice the redevelopment of the Pydar Street proposals in the city centre.

Residential Development

In addition to the commercial uses detailed above, the current proposal will provide up to 130 new residential dwellings which will provide much needed homes to meet the housing needs of existing and future residents of Truro. The comprehensive proposals and the integration of the proposed dwellings with the approved housing scheme on the adjacent site will secure a high quality extension to the existing settlement which will benefit the future residents.

The new properties will also increase the resident population of the area, creating a critical mass capable of supporting the enhancement of the infrastructure in the wider area, including the provision of the western district centre. As such, the proposed residential development will benefit existing residents as well as new ones.

Community Benefits

The community will benefit from the provision of a district shopping centre which meets their day-to-day shopping needs. In addition, the application proposal incorporates open woodland areas, two sports pitches and a community sports pavilion. As such, the community's retail and leisure provision will be significantly enhanced by the proposals.

In addition to community benefits directly flowing from the application proposal, the development will provide the funding necessary to deliver the multi million pound community stadium development. Delivery of the Stadium for Cornwall will bring about a wide range of social, cultural and economic benefits for the local community including the provision of new and improved sporting, conference, event and training facilities for Truro and the wider Cornwall area.

In addition, the high quality, modern and fit-for purpose stadium will become to the region's professional sporting teams. This will allow them to relocate from existing grounds, not only providing enhanced sporting facilities, which it is hoped will positively impact on team success, but also providing a sense of community pride and sense of ownership for local residents.

The sporting, conferencing and cultural events to be held at the stadium will in turn have spin-off economic benefits for the local community by means of investment and additional visitors to the area.



Jobs and Training Benefits

The proposed development will directly create an estimated 287 (FTE) jobs. In addition, the proposals will also lead to indirect job creation through the construction phase and, once operational, the on-going servicing of the site and its occupants.

The employees are very likely to be sourced from the local labour market and consideration will also be given to training programme links in both construction and service industry skills with local colleges and training centres.

The creation of a range of flexible jobs across a range of sectors, will not only help to reduce local unemployment levels but will also help to increase local expenditure and investment for the area.

In addition to the direct employment and training benefits associated with the application proposal, the enabling of the stadium project will create up to a further 109 (FTE) employment opportunities. Moreover, Truro and Penwith College will occupy part of the stadium, taking teaching space, but also providing the catering service for the stadium. As such, the job and training benefits of the scheme go beyond the application proposals themselves.



4.3. Sustainable Design Solution

Sustainable Development

The proposed development responds in full to best practice national planning guidance for sustainability and exceeds the minimum standards required by 2013 Building Regulations. The development will be sustainable in the following ways:

Economy: Local jobs will be created on site from fuelling the local economy through its construction and ensuring appropriate employment facilities are provided close by to reduce the need for unnecessary travel for basic services and work.

Transport: Sustainable transport modes such as cycling and walking are to be promoted through the provision of dedicated pathways connecting to established routes into and around Truro. The development will be linked to an established Park & Ride facility near the site, providing direct and cost effective transport into the City Centre. All dwellings will be provided with 'home office' facilities which will facilitate working from home and reduce unnecessary car journeys.

Environment: A variety of green spaces and buffer zones will be provided and these will integrate with the existing wildlife habitats found on the site. Trees and Cornish hedges will be retained as illustrated in the landscape strategy with appropriate buffer zones, maximising the sustainable use of existing resources. Planting schemes should be in preference for native and / or wildlife attracting species. Wetlands and swales will be incorporated, promoting sustainable drainage, enhancing biodiversity, assisting in delivering local cooling in summer and reducing air pollution. A focus on energy efficiency and incorporating renewable technologies will reduce the carbon dioxide emissions from the site below a 2010 Building Regulations baseline.

Community: A range of open green areas, play spaces, share surfaces and dedicated community spaces will help to encourage social interaction across the development.

Energy Production and Conservation

As detailed within the Energy Statement accompanying the planning application, all residential dwellings will benefit from energy efficient techniques such as reduced U-values via an enhanced fabric specification, highly efficient gas boilers, enhanced heating controls and an air tight build. The focus on enhanced fabric energy efficiency is an economically prudent strategy that maintains the maximum carbon dioxide savings over the lifetime of the development.

Selection of Materials

The selection of construction materials for all of the new buildings will favour those with the lowest environmental impact over their life-cycle. Timber will be sourced from well-managed and licensed European sources to reduce transportation emissions. Efforts will be made to source locally available building materials wherever possible.

Solar Access and Daylighting

The majority of dwellings have main living rooms that face due south. This assists in the maximum use of passive solar gains for heating, reducing the demand for central heating and associated carbon dioxide emissions. Wherever practicable, windows will be sized to take maximum advantage of natural daylight. This will again reduce the heating demand but will also limit the energy demand for electric lighting.

Water Conservation

To reduce water consumption within all residential dwellings to a total of no more than 125 litres per person per day, water efficient sanitary devices will be installed. This will potentially include dual flush WCs, spray/aerated taps, and reduced flow showers. Water meters will be installed in all homes/buildings to encourage future occupants to make maximum water savings.

Sustainable Drainage

The proposed development will incorporate Sustainable Drainage Systems, into the surface water management train, to control and treat surface water runoff at source. To provide both habitat enhancement and maintain groundwater flows, similar to the existing drainage regime, it is proposed to utilise a combination of both infiltration and above ground storage techniques. This approach was supported by the Environment Agency within the adjacent Langarth development and it is therefore logical that it should be replicated through adjacent developments.

It is proposed that the commercial area will drain to a system of swales and wet ponds which will integrate with the green infrastructure and provide amenity enhancement. Prior to entering the wet ponds, swales and permeable paving will be incorporated in the upstream system to improve water quality of surface water runoff. The downstream ponds will provide the storage element of the system with the intercepted surface water stored above the permanently retained water level. The outfall from the system will be restricted to the calculated 1 in 1 year Greenfield runoff rate, for the undeveloped site, and therefore represents a betterment to the downstream catchment up to the 1 in 100 year plus 30% climate change rainfall event.

The infiltration aspect of the drainage proposal, that will re-charge groundwater levels, will be provided through private soakaways and permeable paving within the residential areas. Where feasible, parking courts or private drives will be constructed using permeable paving to treat surface water prior to infiltration.

Domestic Recycling

Residents of homes will be provided with bin stores, which will include sufficient space to accommodate the local authority refuse and recyclable waste collection service.

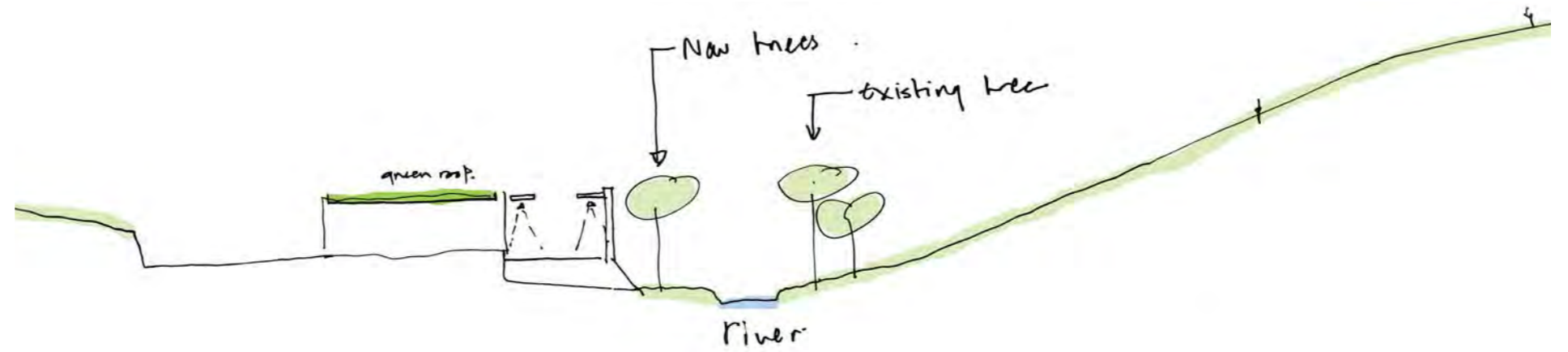


4.4. Design Development

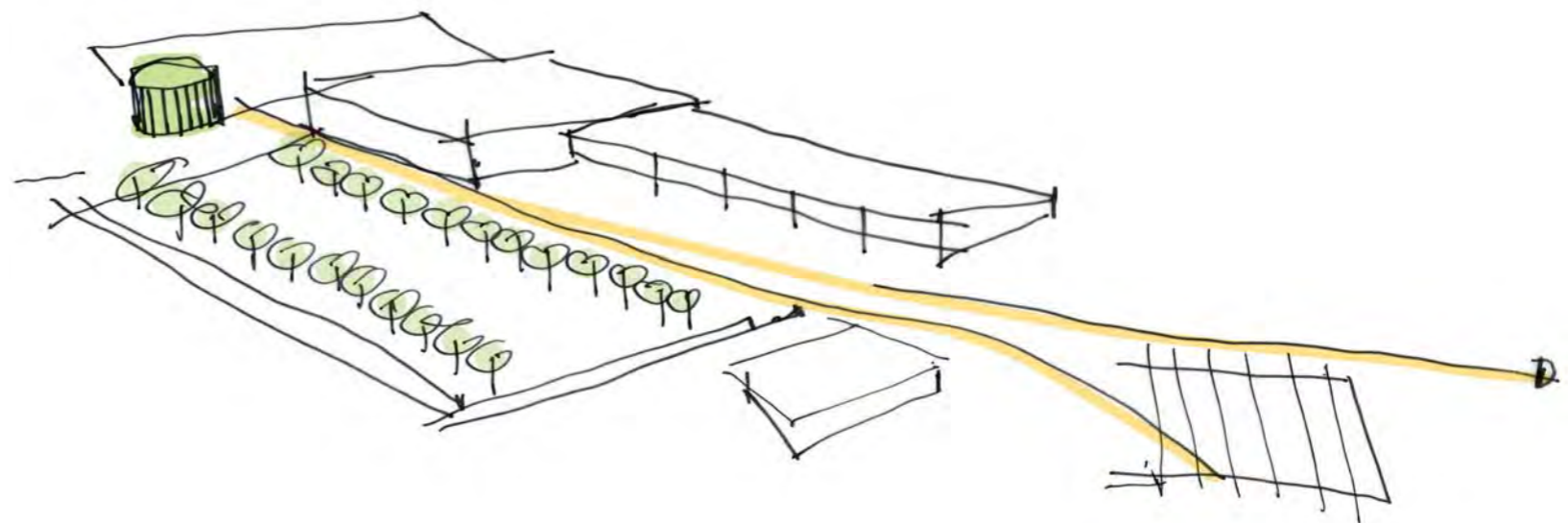
The following pages analysis and comment on the various design layouts to the site.

Images:

1. Sketch showing the relationship between the food store and the wetland public open space
2. Evolution sketch of the district centre
3. Early evolution of the dumbbell concept
4. Sketch showing the green route passing through the residential area to the Langarth masterplan
5. Sketch showing the connection between the consented Stadium and the proposed district centre



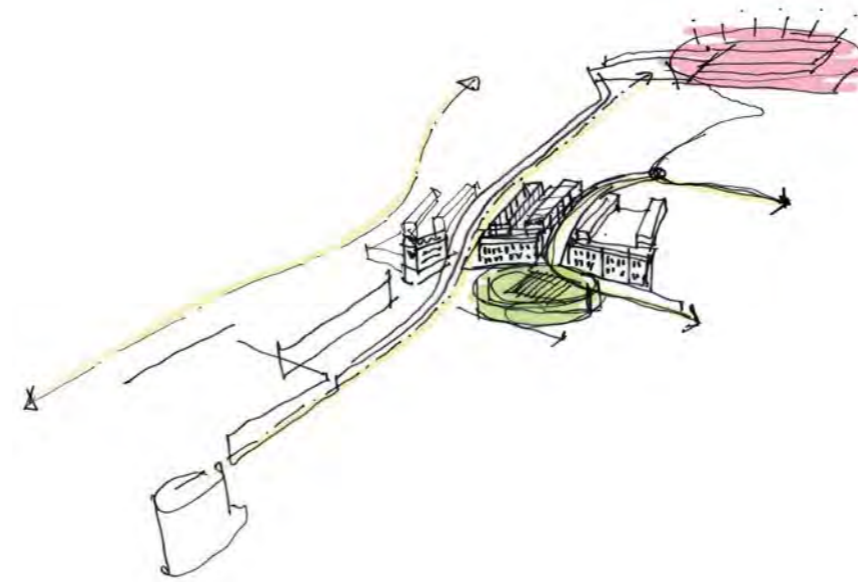
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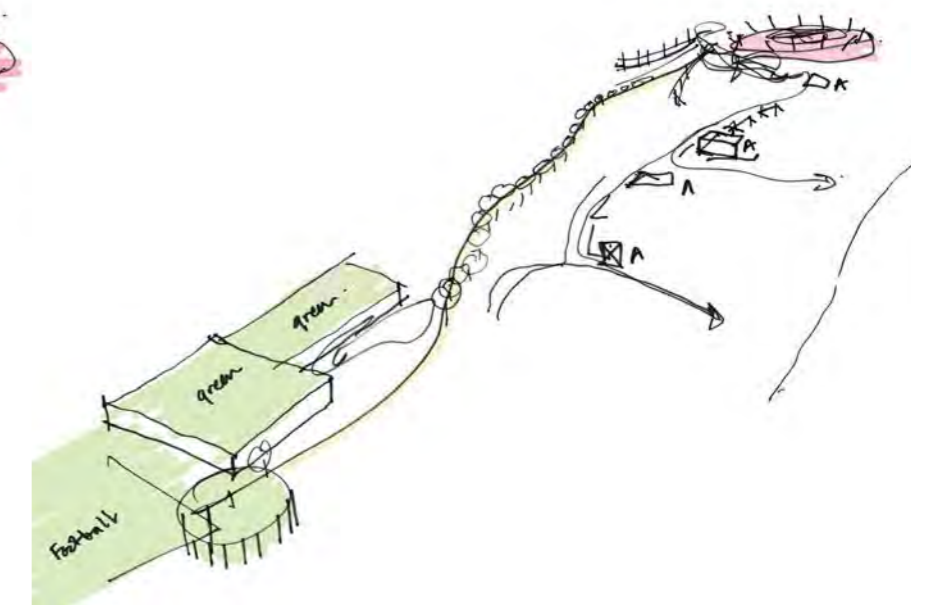
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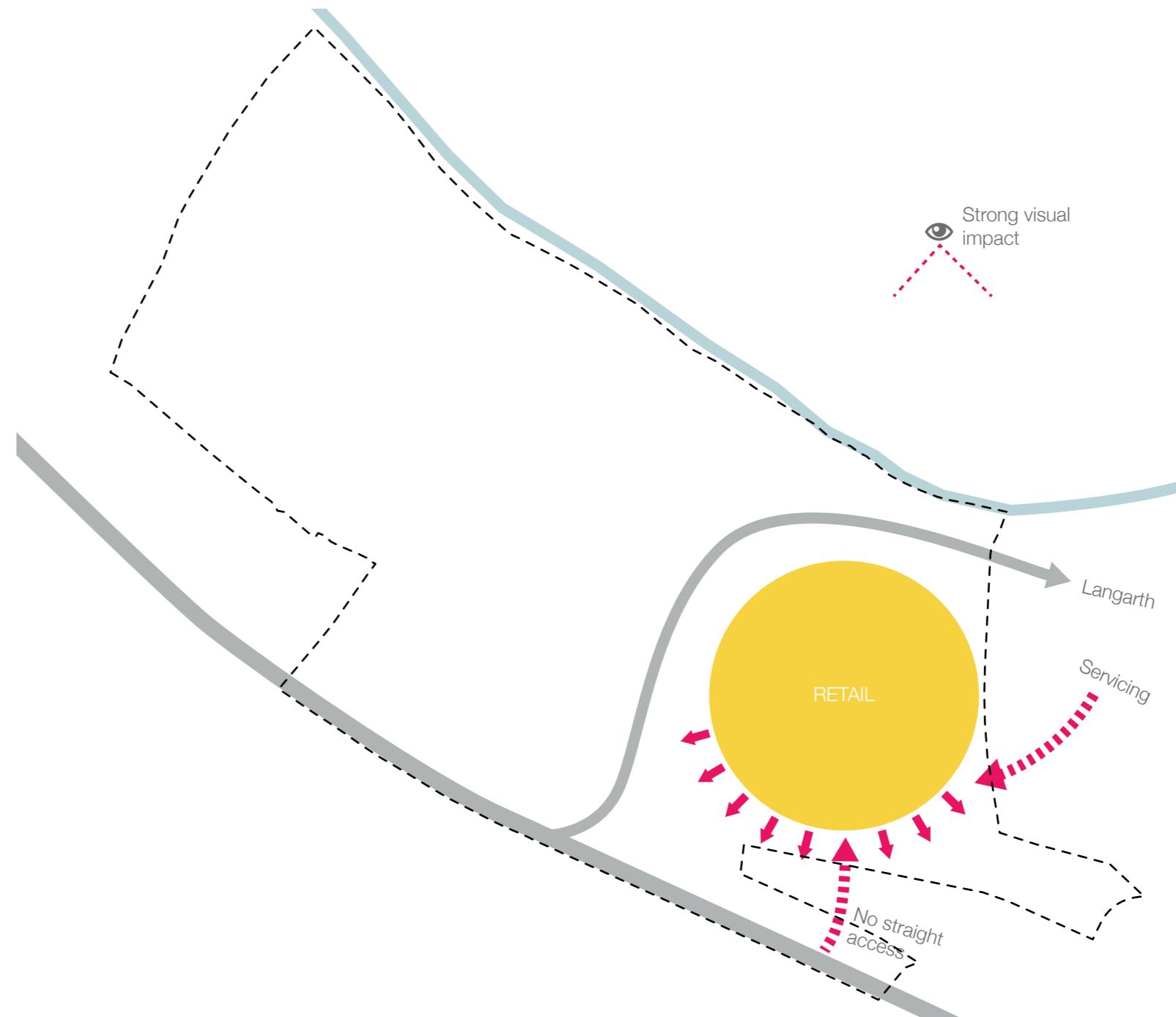
4.4. Design Development

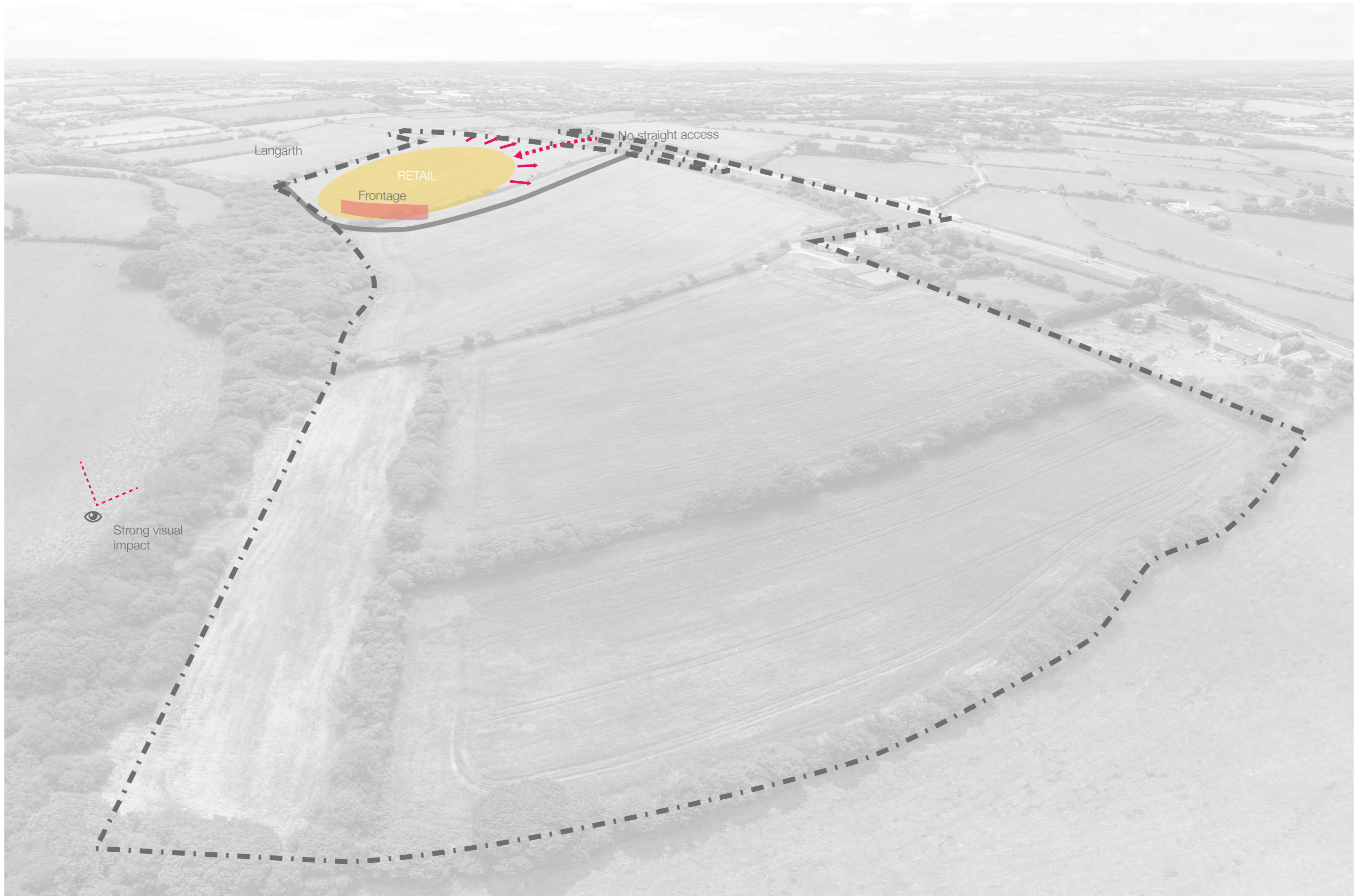
Layout 1 – District Centre at East of Site

The initial response was to locate the main retail aspects of the application as close to the consented Langarth masterplan as possible. This strategy seemed to present the most logical and acceptable layout however there were factors that suggested that this strategy was not ideal. These included:

- 1. Topography.** The food store should ideally be located on level ground. By placing the retail content on the steepest part of the site in the south eastern corner would create an extensive amount of 'cut and fill' of up to plus and minus 12 metres. This excessive aspect would be expensive and create an unattractive and alien form in the landscape.
- 2. Access.** The vehicular access to the district centre would be unacceptable from an accessibility viewpoint and would relate badly to the consented Langarth masterplan.
- 3. Visibility – Commercial.** Due to the excessive change in level and subsequent orientation of the building, the frontage would look away from the main highway. This is not acceptable to retailers. Furthermore because of the form of the excavation, the site is not visible from the road. There is also a large area of vegetation that obscures the site from the road in this location.
- 4. Visibility – Visual Impact.** The resultant layout facing away from the consented Langarth masterplan and westward would have a significant detrimental visual impact. The accommodation would be elevated and clearly seen from the west. In addition to this, the commercial requirement for lighting and signage to the front of the store would be significant.
- 5.** Due to the excessive change in level, servicing to the rear of the building would be well hidden but access for service vehicles would conflict with the wider layout and have a poor relationship with the consented Langarth masterplan.

Due to these five factors, alternative layouts and locations for the district centre were considered for the site.





4.4. Design Development

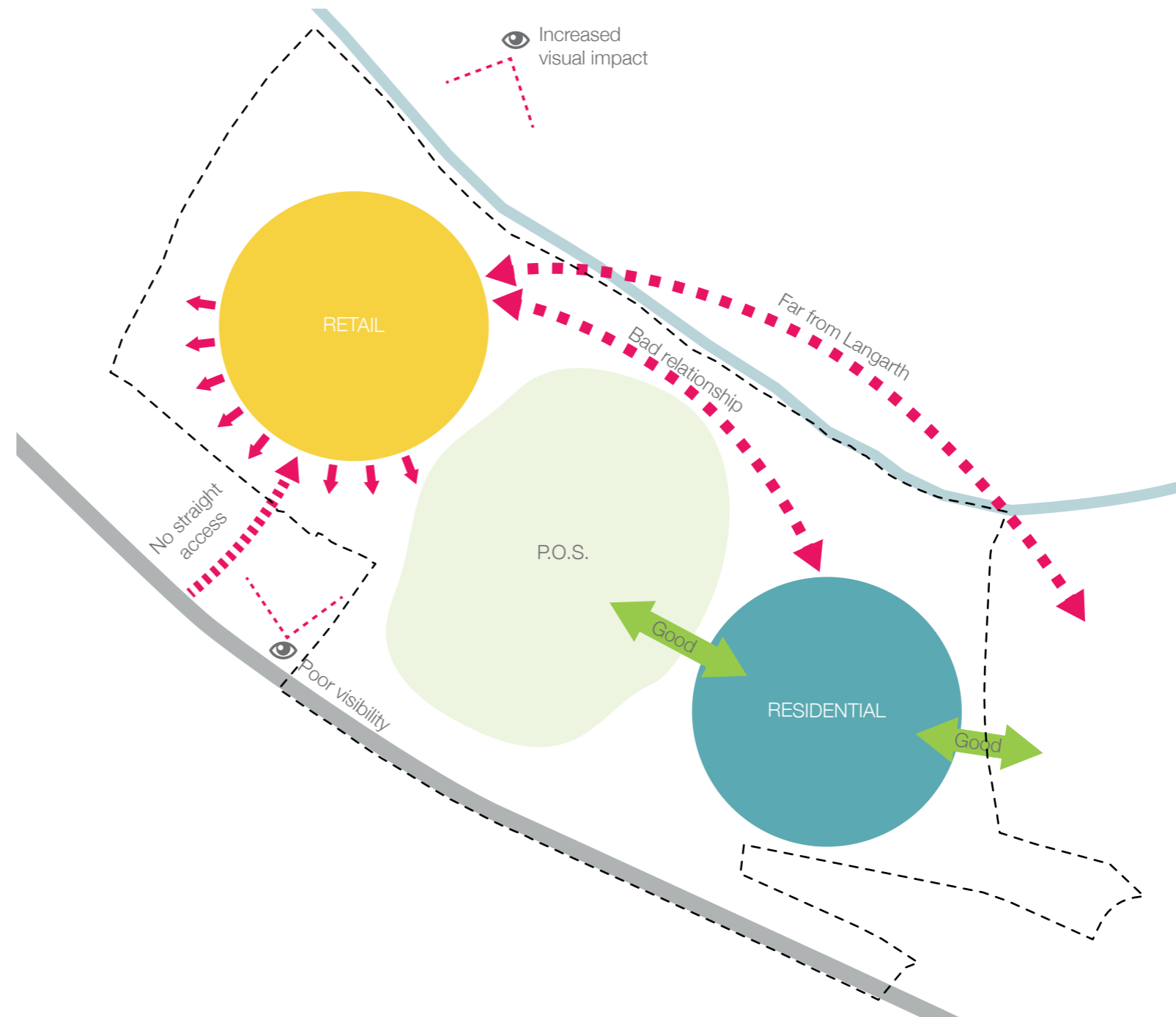
Layout 2 - District Centre to West of Site

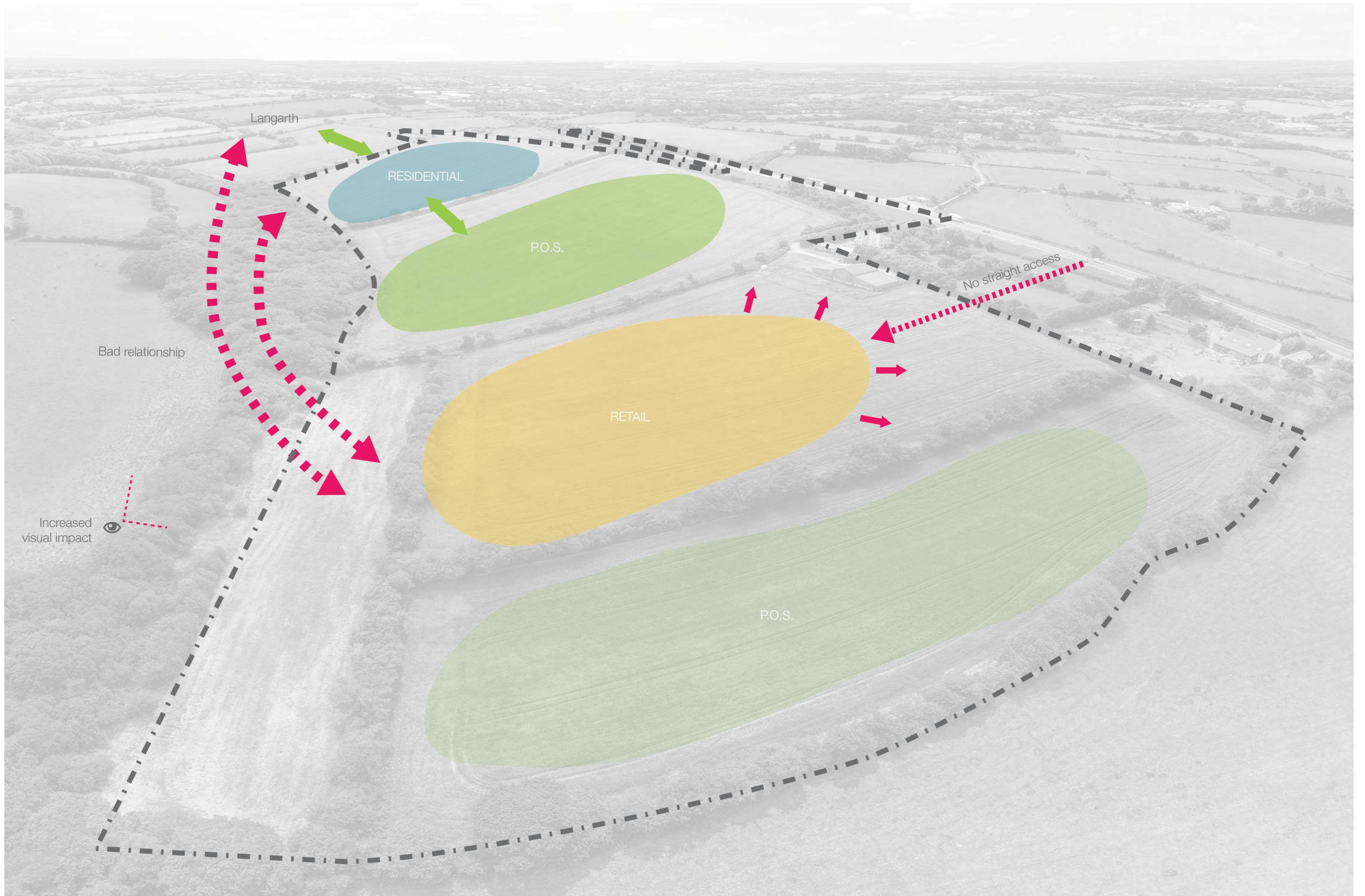
By placing the district centre to the west of the site the visual impact from the west is improved as the topography allows the retail content to sit at a lower level and can be placed on flatter land. This arrangement also ensures that the main active frontage of the main retail elements face away from the countryside and instead face towards the main highway and wider masterplan. This arrangement is not only preferable from a visual impact perspective but also from a commercial view point as the amount of 'cut and fill' is significantly reduced.

However there are three main challenges for this layout:

1. The increased distance of the district centre from the residential content of the consented Langarth housing.
2. The visibility of the district centre from the main road due to the existing farm house and third party land ownership.
3. The requirement of the public open space will mean that the district centre is separated from the housing of both the application and wider consented Langarth masterplan.

Based on these three factors a third location for the district centre was considered.





4.4. Design Development

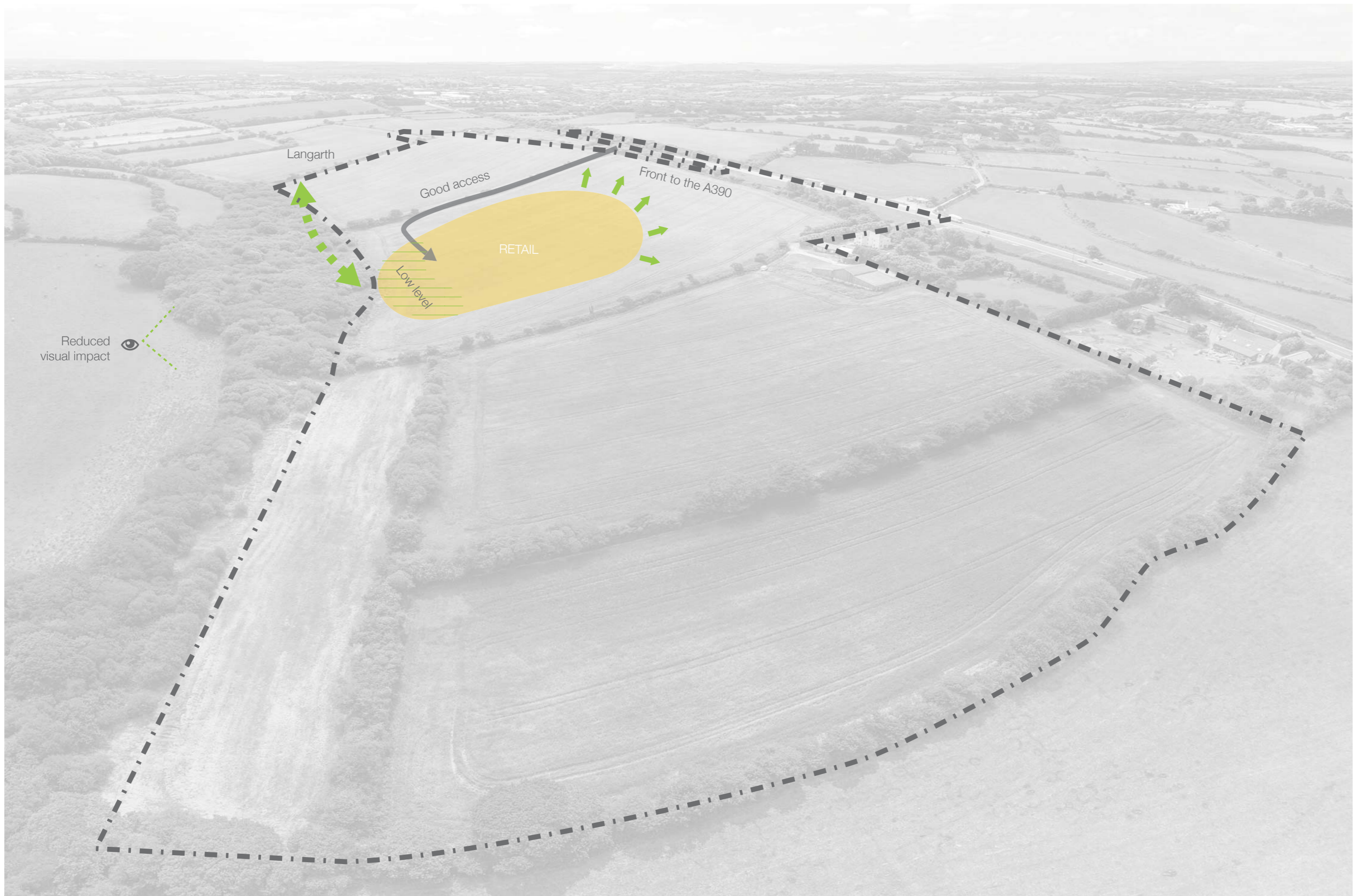
Layout 3 - District Centre at Centre of Site

The third option considers the district centre in the middle of the application site. The benefits of this location are as follows:

1. **Physical and visual connection to main highway.** This position has the best connection to the A390
2. **Topography.** Across the site there are severe changes in level however this area (especially to the north) is preferable for development. Cut and fill is required but unlike to the east where up to 12 metres is required, in this location typically a maximum of 3 to 4 metres is needed.
3. **Visual impact** from west. If the retail element of the development is placed on the lowest part of site and faces away from western views from the open country side, the impact is minimised.
4. **Connection to consented Langarth masterplan.** There is a good relationship to the consented Langarth masterplan. The orientation of the district centre is good, the established vehicular and pedestrian routes are enhanced and there is an improved concept for the masterplan.

By placing the district centre in this location two 'sub layouts' need to be considered for the position of the public open space and housing.





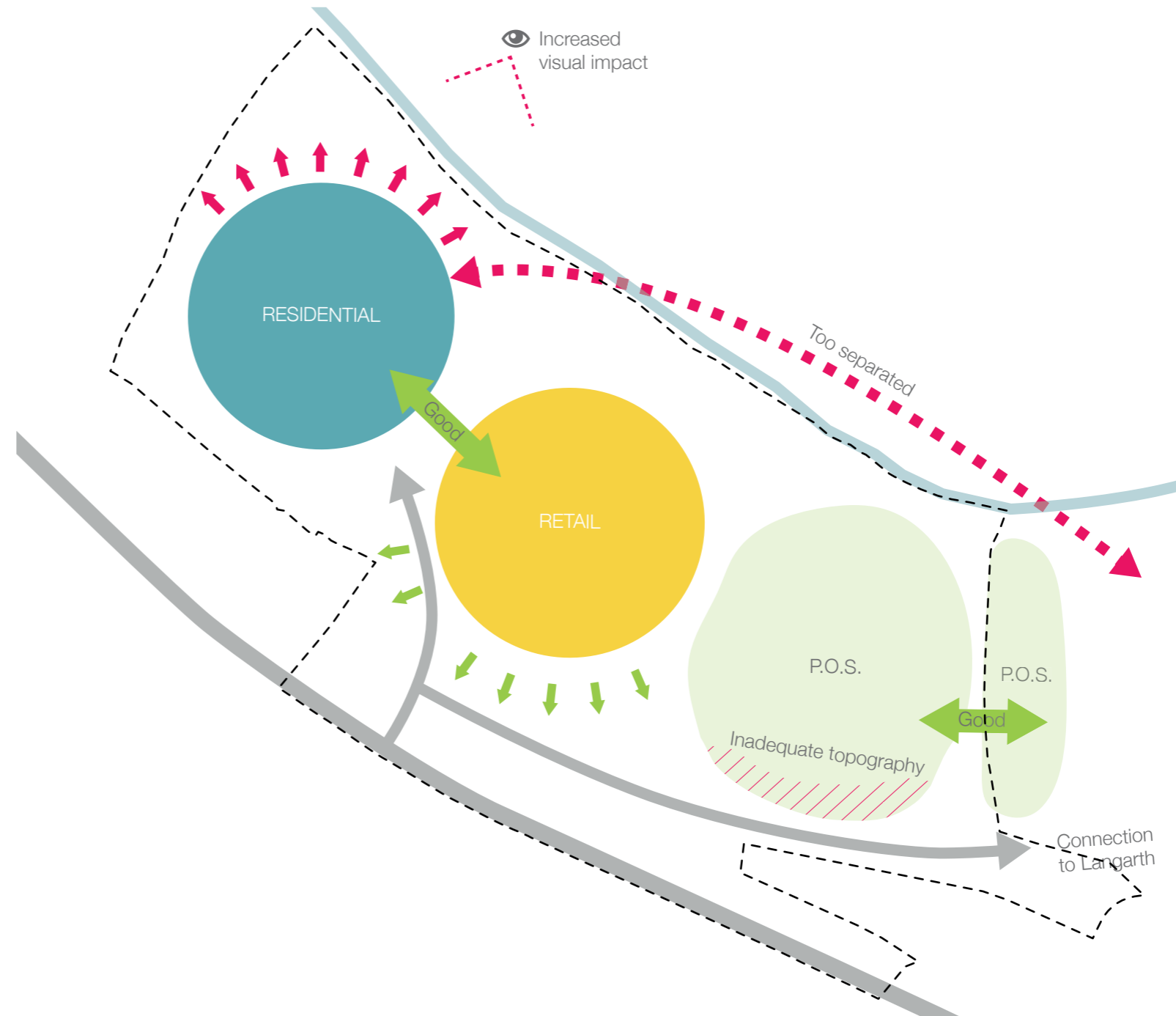
4.4. Design Development

Layout 3A

If the large area of public open space is located to the east of the district centre, it has a good connection to the consented Langarth masterplan.

However there are some significant challenges if the eastern area is used for public open space. These are:

1. **Topography.** The eastern area has the most severe level changes and if the area is going to be used properly, extensive areas of cut and fill will be required. It is proposed that the majority of the public open space would be used for football pitches which generally need to be level. It is clear that this location would not only be very costly to develop but would also result in an alien and unattractive landscape form.
2. Placing the public open space in this location causes the visual separation of the district centre from the consented Langarth masterplan.
3. Subsequent housing development to the west of the food store would be isolated from the consented Langarth masterplan and public open space.





4.4. Design Development

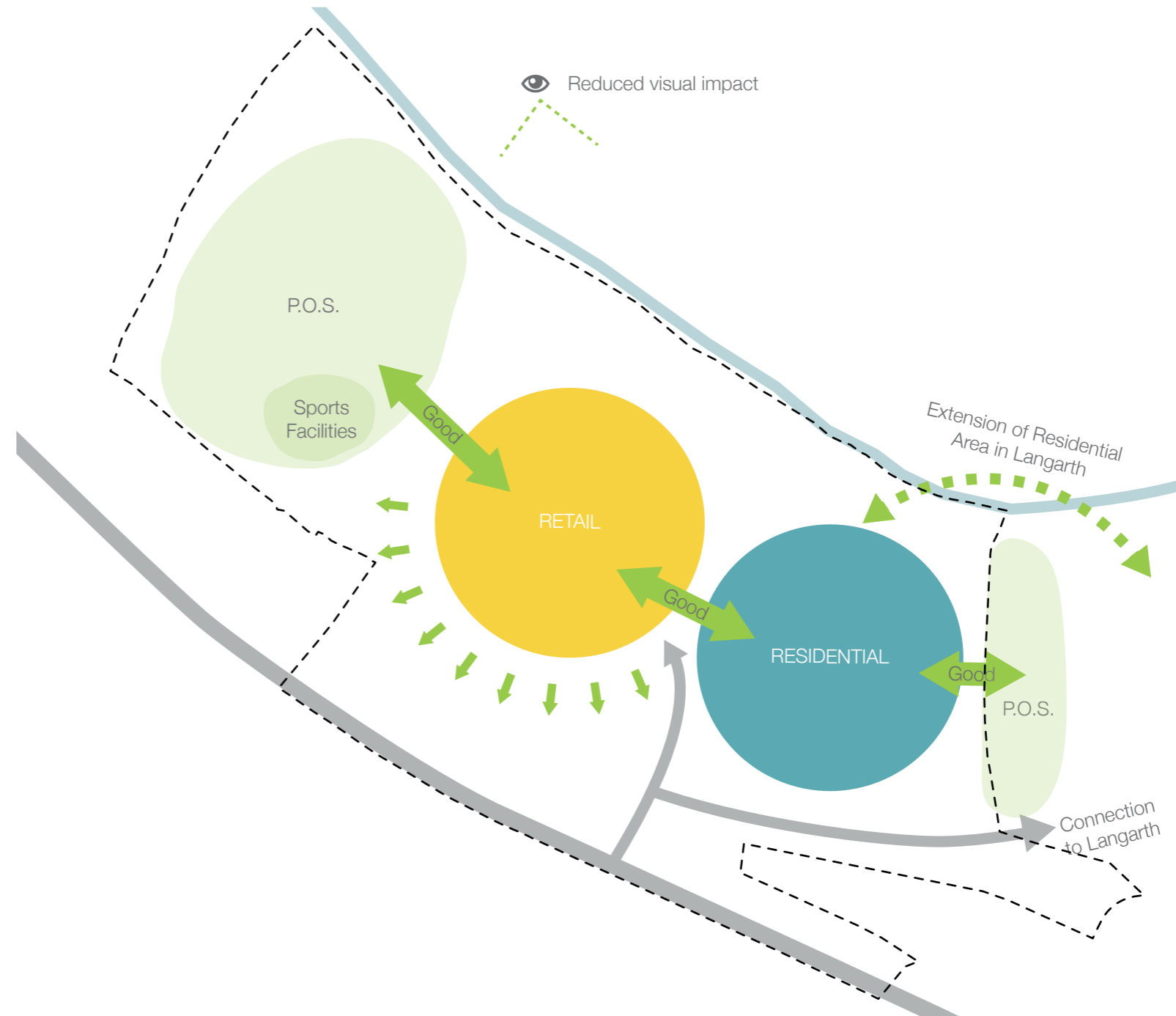
Layout 3B (Preferred Layout)

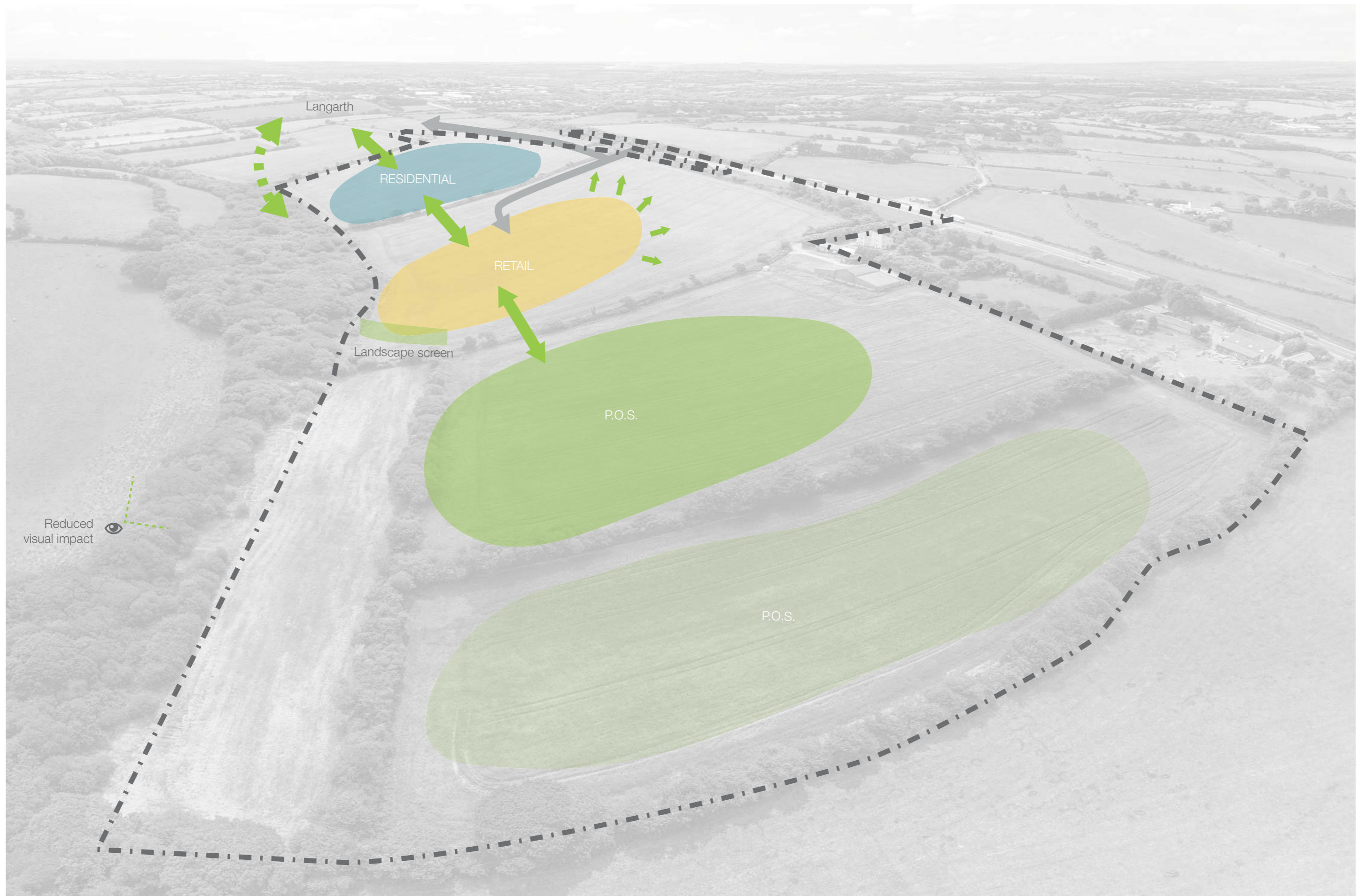
By placing residential accommodation to west of consented Langarth scheme and adjacent to the district centre, the following attributes are achieved:

1. Larger public open space to west. This has a better relationship to the open landscape.
2. The topography at the rest of the site is less severe. Some cut and fill will be required for sport facilities but not as extensive as in the east. This will ensure that the public open space is more viable, appropriate and attractive.
3. Some public open space will be provided to replace the landscape strip to the western edge of the consented Langarth masterplan. Due to the topography it is suggested that this area will be a park with children's play areas. The provision of these facilities will relate well to the housing on either side.
4. The established language of the consented housing will extend into the application site and the built form will terminate with the district centre. This will create an appropriate and 'joined-up' architectural approach.

Further Commentary on the Layout

The frontage of the food store and comparison retail will help to animate the pedestrian route and district centre. The service yard will be more discrete at the north of the site and will be hidden from the long distant views with a landscape screen.





4.5. Preferred layout

The preferred layout with the district centre and food store located at the centre of the application site with residential accommodation to the east and the majority of public open space (including sports pitches and associated facilities) located to the west has the following positive attributes:

- 1.** There is a good physical and visual connection to the main highway. This is critical for the viability of the project and the attractiveness to retailers. A clear and simple connection will also ensure improved orientation for the community and visitors.
- 2.** The topography of the site is challenging and extreme in places. The severe changes in level restrict access, viability and appropriateness in many locations on the site. By working with the existing landscape and placing the buildings in the landscape that minimise the impact is necessary. Therefore the larger buildings are located on the flatter parts of the site and towards the lower levels.
- 3.** The visual impact from the open country side from the west is important. This impact is significantly minimised by placing the larger buildings on the lowest part of site. This issue is improved further by facing the main activities and frontages away from the western views.
- 4.** The orientation of the district centre facing away from the western views significantly improves the connectivity to the wider consented Langarth masterplan and stadium to the east. By extending the established vehicular and pedestrian routes of the consented Langarth masterplan towards the district centre also improves this relationship.
- 5.** By placing the larger public open space to west of the site, the relationship of the development to the landscape is improved. The public open space uses soften the edge of the development and aims to ensure the district centre connects well with the landscape. As the topography in the west of the site is less severe, a reduction in the changes in level will reduce cut and fill. This will ensure that the public open space is more viable, appropriate and attractive.
- 6.** Some public open space will be provided to replace the landscape strip to the western edge of the consented Langarth masterplan. Due to the topography it is suggested that this area will be a park with children's play areas. The provision of these facilities will relate well to the housing either side. The houses will front onto the new public space producing an appropriate residential language.
- 7.** The established language of the consented housing will extend into the application site and the built form will terminate with the district centre. This will create an appropriate and 'joined-up' architectural approach.
- 8.** The frontage of the food store and comparison retail will help to animate the pedestrian route and district centre. The architectural detailing to these areas will be enhanced and add to the character and attractiveness of the area. By creating a central hub that has a focus of uses in one place ensures that the quality is maintained.
- 9.** The service yard will be more discrete at the north of the site and will be hidden from the long distant views with a landscape screen. By enclosing this area the noise and light spill will be minimised.

Images:

Opposite page: Preferred Layout Plan 1:2500 @ A3





4.5. Preferred layout

4.5.1. Street Typologies

4 different street typologies are proposed for the site:

1. Core Road

- Principal vehicular access into site from the A390.
- Boulevard character with room for street trees on both sides.
- Buildings 2 to 4 storeys in height.
- 6.75m carriageway width.

2. Street

- Major access road within residential areas providing 'return loops' back to Core Road.
- Traditional street character with room for street trees between parking bays.
- Buildings 2 to 3 storeys in height.
- Distance between buildings 20m.
- 5.5m carriageway width.
- 1.8m foot way both sides.
- Parallel on-street parking broken into groups with street trees.
- 1.0m wide service strip / steps to accommodate any level changes.
- Facades set back 1.5 to 3.0m with front areas for private planting.

3. Lane

- Minor access road within residential areas.
- Traditional street character with room for street trees.
- Building 2 to 3 storeys in height.
- Distance between buildings 18m.
- 5.5m carriageway width.
- 1.8m foot way on one side with service strip or 1.8m on both sides – alternated to create a varied streetscape.
- Parallel on-street parking broken into groups with street trees.
- Facades set back 1.0 to 2.0m with front areas for private planting.
- No through routes provided.

4. Green Lane

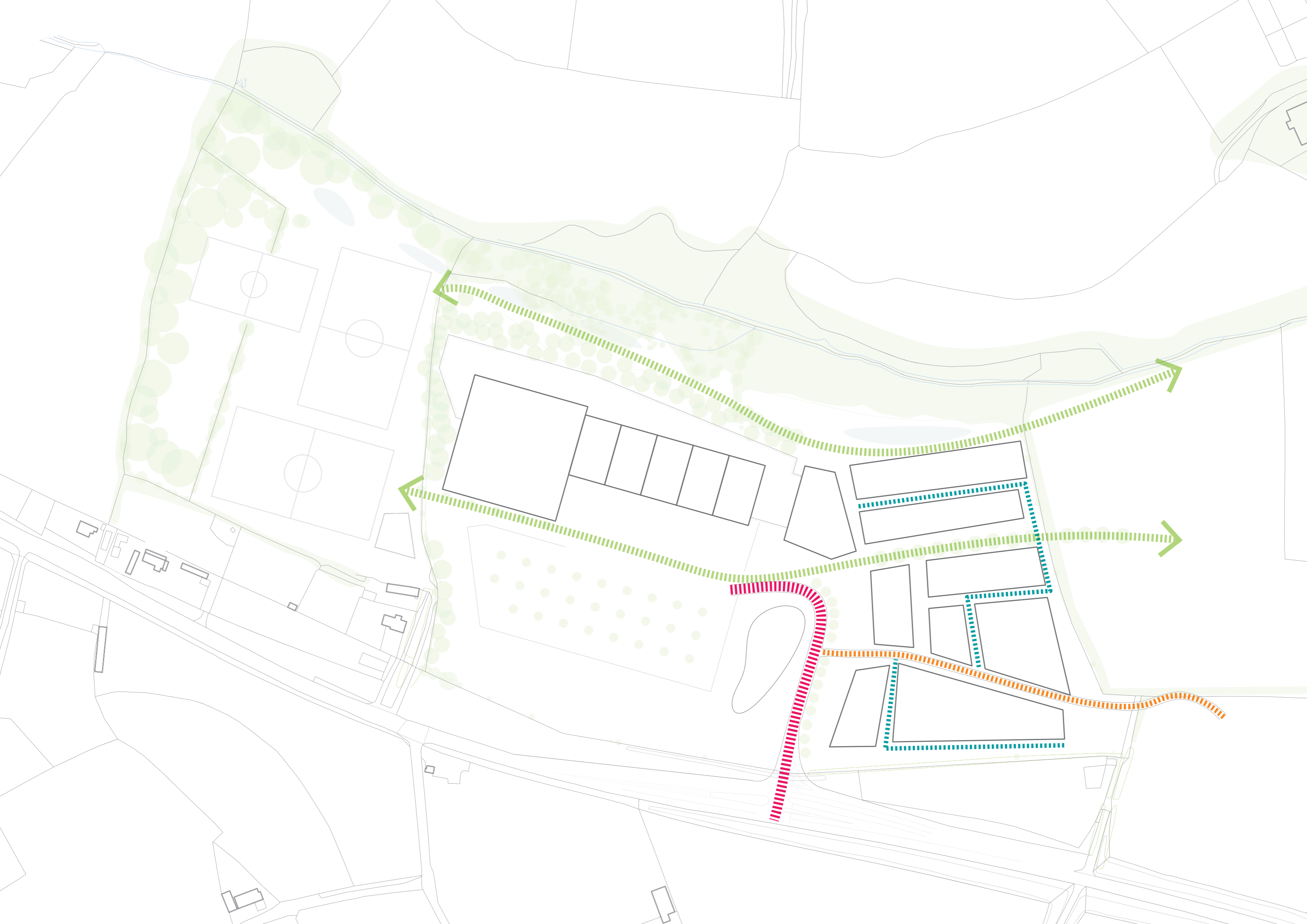
- Central pedestrian / cycle route.
- Should be shared surface.
- Traditional street character facing onto retained hedgerows and Cornish Hedges and food growing areas.
- Building 2 to 3.5 storey height.
- Distance between buildings 40.0 to 45.0m.
- 1.8 m foot way on one side with service strip or both sides.
- Varied carriageway width down to 3.2m.
- Facades set back 1.0 to 0.5 with pocket planting for climbers.
- Raised foot ways to some dwellings if required.
- No through routes provided.

Key

	Core Road
	Street
	Lane
	Green Lane

Images:

Opposite page: Street Typologies Plan 1:2000 @ A3



4.5. Preferred layout

4.5.2. Green Routes

Green routes encourage pedestrian activity and healthier ways of life. By using strong desire lines and providing safe environments communities are encouraged to walk or cycle instead of using cars. If this strategy is balanced with good public transport links, an enhanced environment is achieved.

Within the application a strategy that mirrors the consented Langarth masterplan is adopted. The strong link that is indicated from the east will clearly extend to the district centre. This route will be fronted by residential accommodation. This will help natural policing and result in a safer and more secure environment.

Vehicular access in this area will only be available to residents. No 'ways through' will be provided. This will ensure no 'rat runs' exist. High quality shared surfaces are proposed in these locations.

The green route terminates in the largest area of public open space to the west. The topography in this location will be adapted to provide good quality sports facilities for the wider community. By having a mixture of activities along the green route promotes use and increases interest. By having a strong community use at the end of the green route that echoes the leisure and sport use of the stadium will promote the green use further.

In addition to the green route that runs to the district centre, a softer route exists that follows the bottom of the valley. This route will have an enhanced ecological and environmental character. This arrangement has been adopted by the consented Langarth masterplan and the application clearly extends this strategy. This area will be good for various activities such as dog walkers and allows a quieter and more diverse experience than the primary green route.





4.5. Preferred layout

4.5.3. Activity

It is vital to ensure a vibrant and active street frontage is achieved. There are a number of street types proposed within the application:

The District Centre

The district centre must have an attractive and active frontage. This is required for urban design and commercial reasons. All retail and food and beverage activity will be centred in on one location and be closely coordinated with parking, pedestrian route and public transport links. By carefully considering these aspects and bringing them together, the concept of a vibrant hub at one end of the 'dumb bell of development' is strengthened.

All servicing to the retail aspects of the district centre will be located away from pedestrians. This will improve safety and ensure a desirable sense of place is achieved.

The main vehicular route

The connecting main vehicular route will have a similar character to the consented Langarth masterplan. This is a main road and will be designed accordingly to meet with the required vehicular standards. Property will front onto the main road from either side and suitable activity, scale and frontage will match the development to the east.

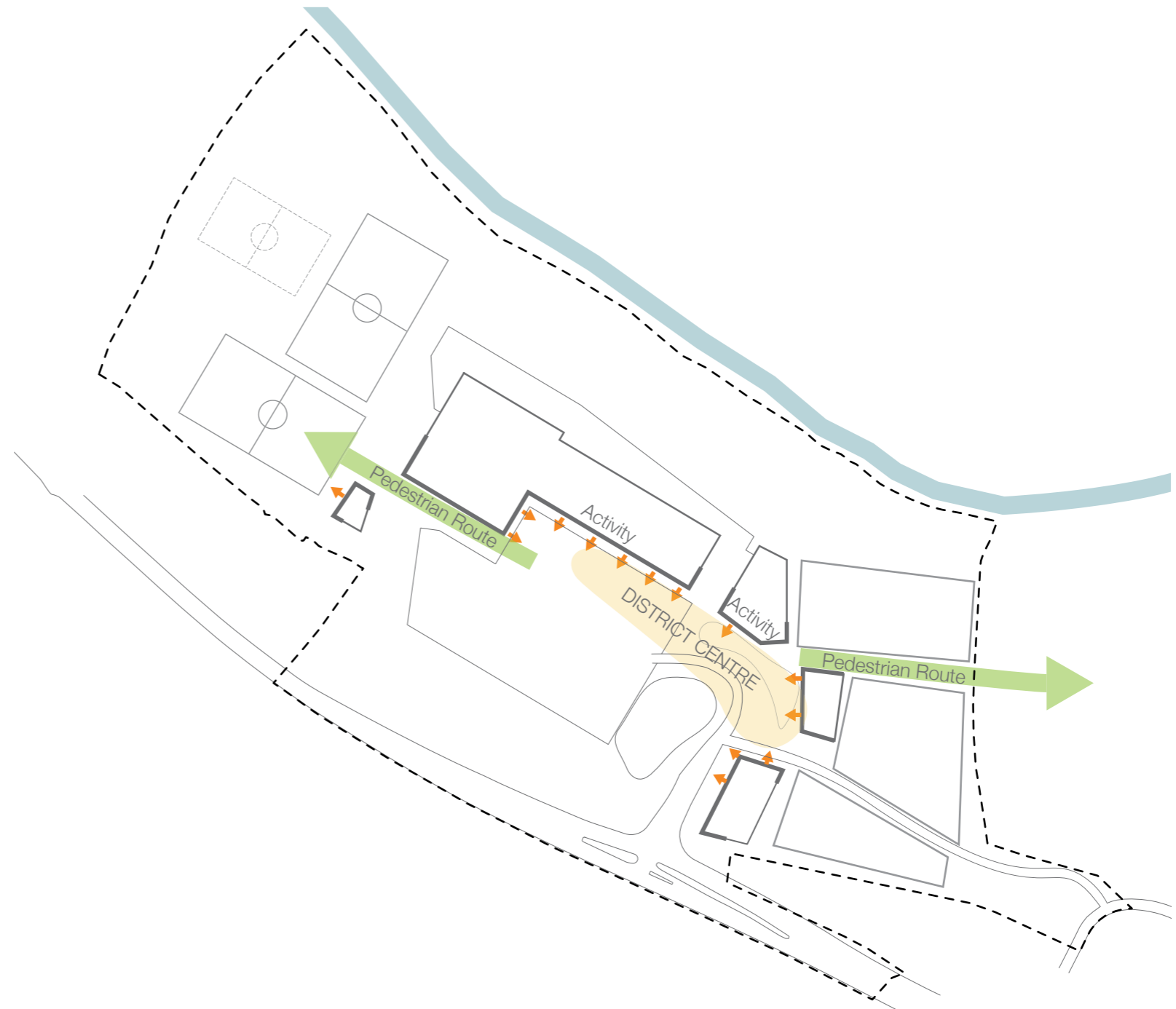
Pedestrians will access this route however they will be safely separated from the main road.

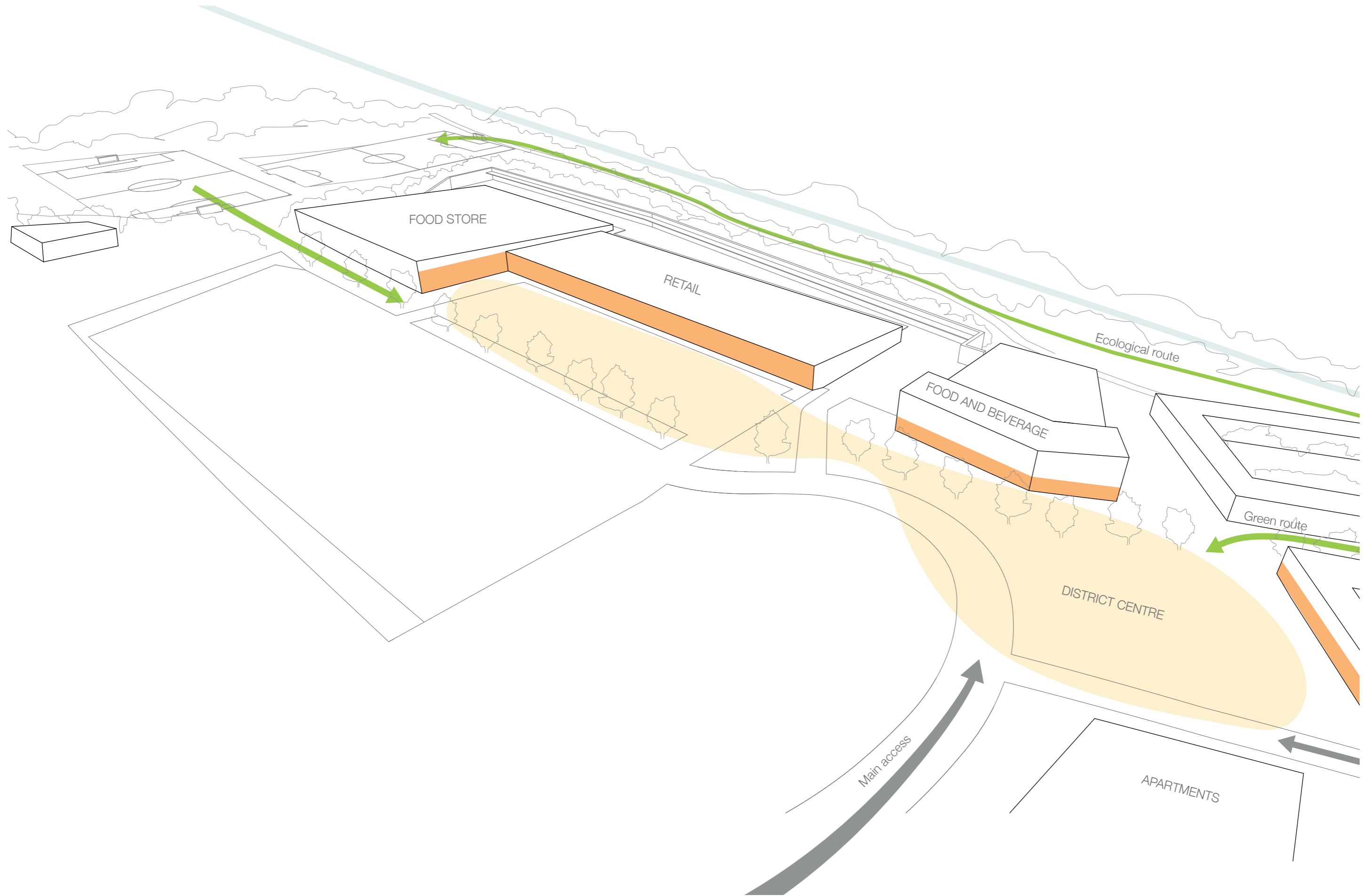
The residential frontage onto the green route

Due to the need to balance the topography and orientation of the proposed access routes that connect the sites, the architectural language in this location will be similar to the housing of the wider consented Langarth masterplan.

A design of housing with a specific architectural typology is adopted that typically has private gardens at a different level to the access. The residential accommodation will have a traditional street frontage.

This strategy will ensure a varied and interesting urban form is achieved that is appropriate to setting and the wider masterplan. The residential street character will be designed with detail that reflects the local character, scale and detailing.





4.5. Preferred layout

4.5.4. Integration

By adopting an architectural approach that has been established and agreed helps the connectivity and integration of the application scheme with the consented Langarth masterplan.

The housing that sits to the east of the application site will knit well to the residential areas to the west of the consented scheme. The building massing, appearance and scale will be the same.

The introduction of the district centre will integrate the two sites well and provide a distinctive character to the overall development. Residents of the consented Langarth scheme will have easy access to the application site using the clear vehicular and pedestrian routes.

The proposed sport and leisure uses within the public open space will integrate well and provide good links across the site and towards the stadium.

The integration of the development to the existing landscape has been considered. The main frontage of the district centre faces toward the wider Langarth masterplan. The associated district centre buildings are in one area creating an active and vibrant place.

The integration of the food store within the wider open landscape has been considered. Screening and roofing of the service yard with additional planting to the rear will significantly reduce the visual impact. The use of green roofs will soften the impact when viewed from the west. The pitch of the green roofs of the food store and retail units will match the topography of the existing landscape.





4.5. Preferred layout

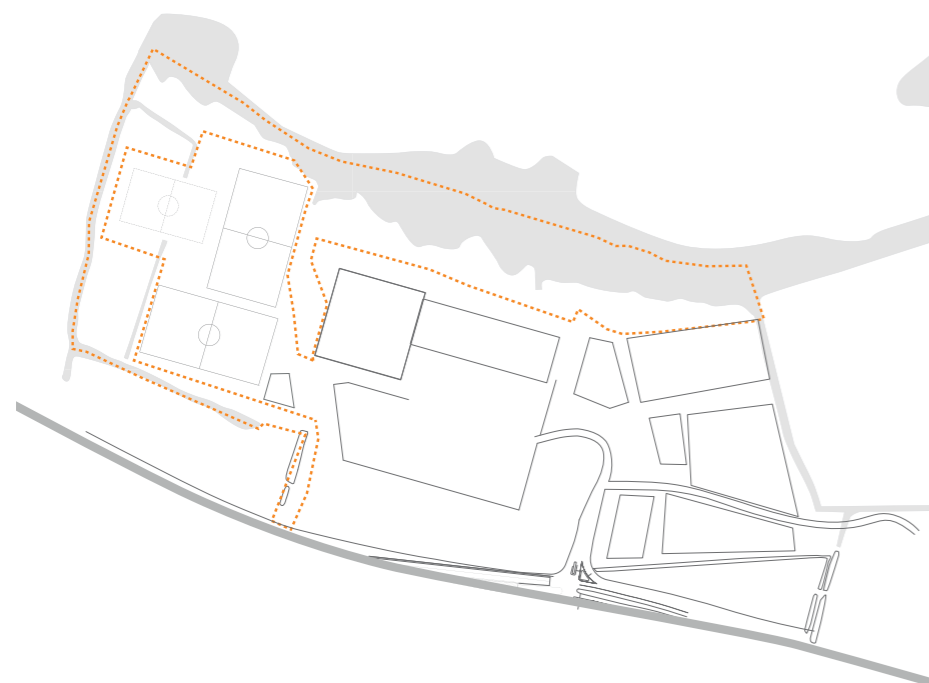
4.5.5. Landscape Strategy

This Landscape Strategy has been prepared in the context of a thorough and detailed understanding of the site landscape and its context and within the framework of relevant policy and design guidance. It has entailed close collaboration between landscape, architectural, engineering, ecological and other professionals.

The existing landscape resource of the site and its context has been considered throughout the assessment, masterplanning and design process to date and has shaped this Landscape Strategy and informed the detailed proposals. The Strategy embraces broader Green Infrastructure and sustainable development principles and seeks to maximise these multifunctional benefits wherever practicable.

Existing published landscape character assessments have also been referenced and utilised in formulating the strategy.

FPCR Environment and Design Ltd. (FPCR) have prepared the Landscape Strategy, Landscape Framework Plan shown on the opposite page, together with the accompanying landscape design proposals.



The underlying objective of the Landscape Strategy is to create a high quality and site specific landscape setting that maximises the immediate and longer term benefits of the landscape proposals and is underpinned by a commitment to a comprehensive landscape management and maintenance regime.

The Landscape Framework Plan for the scheme has been developed as an integral part of the overall scheme proposals. The site layout, building design, access measures, ground modelling and earthworks strategy and other proposals have all been taken into account during the evolution of the Landscape Strategy and the related assessment of the likely landscape and visual effects.





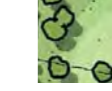

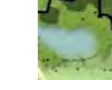


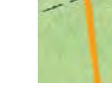
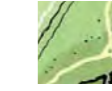

The proposed development will comprise the conservation of existing trees and hedgerows (largely around the perimeter of the site), with significant new structural, tree, hedgerow and shrub planting and open space as part of a mosaic of new habitats and landscape areas. These will satisfy the various landscape, visual, biodiversity and other broader sustainable objectives and in conjunction with the attention to the design of the building, site layout and earthworks strategy, represent a comprehensive site responsive landscape solution.

All of the landscape areas (hard and soft) and features will be managed and maintained in the long term. This will be achieved through the implementation of a comprehensive landscape management and maintenance regime, to ensure the successful establishment and continued thriving of the planting and grassland proposals. It will also cover for all of the public realm and hard landscape areas and features.

The Landscape Strategy is best detailed by reference to a series of Character Zones. It describes the principles of the network of multifunctional Green Infrastructure. These zones are shown opposite and detailed over the following pages.

- Character Zone 4.1 - Wet Woodland Corridor
- Character Zone 4.2 - Structural Landscape
- Character Zone 4.3 - Parkland

KEY

-  Site Boundary
-  Existing Vegetation to be Retained and Protected
-  Proposed Structural Native Species Woodland
-  Proposed Native Species Hedgerows
-  Proposed Native Standard Trees
-  Proposed and Existing Species Rich Meadow and Amenity Grassland
-  Proposed Indicative SUDS / Wetland Features with Aquatic Planting
-  Proposed Adult Football Pitches
-  Proposed Locally Equipped Area of Play (LEAP)
-  Existing Public Rights of Way (PROW)
-  Proposed Footway and / or Cycleways
-  Existing Contours (Meters Above Ordinance Datum)

