RegenCo East Hampshire DISTRICT COUNCIL

St. George's Barracks

Infrastructure Delivery and Management Plan

Commercial in Confidence

Author: Daedalus Environmental Limited
Date: October 2018

IN PARTNERSHIP WITH

DAEDALUS ENVIRONMENTAL CampbellReith consulting engineers fabrik BBP Regeneration Appraisal • Strategy • Delivery Derek Finnie Associates CONSULTANT ECOLOGISTS

Daedalus Environmental Limited
61 London Road
Maidstone
Kent
ME16 8TX

E:enquiries@daedalusenvironmental.co.uk
W:www.daedalusenvironmental.co.uk

Version	Final Draft	**Date**	October 2018
Authors	**Philip Jackson, Meroë Blackford**		
Client:	**RegenCo / East Hants DC**		
Contact:	Steve Pearce		
Address:	Penns Place, Petersfield, Hampshire, GU31 4EX		

CONTENTS

1. BACKGROUND

1.1 St. George's Barracks

In December 2016, it was announced that St George's Barracks would close in 2021. The vacation date is expected to be September of that year.

In early 2017, Rutland County Council and the Ministry of Defence (Defence Infrastructure Organisation) commenced discussions on a collaborative approach to the site's redevelopment.

In late 2017, East Hampshire District Council-RegenCo (the team that spear-headed the redevelopment plans for the Army Garrison at Whitehill & Bordon) was appointed to produce a 'high level' Masterplan for the site for the purpose of initial consultation. This Masterplan was produced in spring 2018. It proposed a development of up to 3,500 homes (in two broad phases to reflect the period during which mineral deposits would be extracted from the eastern part of the site); employment space to facilitate the creation of one job for each home; and supporting primary and social infrastructure.

Extensive engagement and consultation was undertaken during May and June 2018 in the neighbouring villages of Edith Weston and South Luffenham and across the rest of the county of Rutland, including through the distribution of questionnaires, also available via the website.

To help guide the development of future iterations of the evolving Masterplan the St George's Advisory Group was established, which comprises representatives from the parish councils most closely affected by the proposed redevelopment scheme and from the wider County Council. This Group has met monthly since June 2018.

The consultation elicited a wide array and numerous responses.

The County Council and DIO considered these responses and, accordingly, agreed to make a large number of changes to the original high level Masterplan.

This next version of the Masterplan has been produced by EHDC-RegenCo to reflect these recommendations. It now proposes a development of 2,215 homes on the main barracks site; 14 hectares of employment space (capable of generating the equivalent of at least one job for each home); a replacement three-form entry primary school; a new local centre with shops, health and well-being and community facilities; a heritage zone around the site of the Grade II* listed Thor Missile site; extensive landscaped buffer areas; and significant infrastructure enhancements and improvements including highways, public transport, walking and cycling and utilities. Proposals for potential 'community ownership' of some assets have also been made.

Further details of all of these elements are included in the overall 'evolving Masterplan' pack.

1.2 Purpose of the Document

This Infrastructure Delivery and Management Plan (IDMP) has been commissioned by the Ministry of Defence (MOD) and completed by RegenCo to:

- Provide a coherent understanding of what, how and when the infrastructure required to facilitate the delivery of the St George's Barracks site should be implemented, drawing on a range of evidence, analysis, engineering and design work undertaken by the RegenCo team to date
- Inform the procurement process related to the appointment of a Land Sale Delivery Partner, and thus provide potential partners with a clear vision for

what is proposed and expected
- Support the demonstration of viability – whilst a separate viability assessment has been undertaken alongside this IDMP, the ability to demonstrate that the site is deliverable is also important from a planning perspective
- Support funding applications, including to the Housing Infrastructure Fund (HIF)

The Vision for the development has been developed over the previous 12 months by the RegenCo design team, and through continuous consultation with stakeholders. It describes how the MOD, in partnership with Rutland County Council (RCC), envisage the nature of the new community once completed. In order to facilitate this Vision – which can be reviewed as part of the Masterplan documentation – a range of key enabling infrastructure needs to be implemented and maintained in perpetuity.

1.3 Scope

The IDMP covers the main requirements for St George's Barracks site, but excludes the Officer's Mess proposals. To this end it encapsulates requirements for the developable area, upgrades to local transport infrastructure (roads / junctions), utilities provision, as well as the adjacent proposed country park / minerals extraction zone, 'Strategic Gap' and other landscaped areas.

In line with the proposed phasing and build out rates of the development (described within the accompanying Viability Assessment), the main infrastructure requirements of the project are described, the high level costs included, key responsibilities shown and the anticipated overall programme provided.

The development programme is ambitious, driven largely by the requirements of HIF funding spend deadlines, the timing of the MOD's vacation of the site and the need to rapidly secure planning permission. Moreover, much of the transport infrastructure in particular needs to be delivered 'upfront' to ensure that the concerns of the local community are addressed in relation to vehicular movements and access.

The IDMP has therefore been split into the following sections:

- Transport: required junction / road improvements external to the site; construction of primary routes within the development; public transport requirements and the park and ride facility
- Water and drainage: 'statutory' provider responses to expansion of potable, foul and drainage capacity; illustrative drainage requirements and locations; inset arrangements for foul drainage and management of SUDS
- Energy supply: baseline network capacity improvements for power and gas; provision for electric vehicles; alternative heat supply options, renewables solutions and energy storage facilities; construction methodology and building performance requirements
- IT and broadband: provision of fibre to the building
- Long term management and operation: options and preferred route for long term management of the development and its assets; delivery and governance arrangements; illustrative revenue streams and cost profiles
- Overall programme: a 'line by line' Gantt chart covering the planning, design and development periods

2. TRANSPORT INFRASTRUCTURE

2.1 Mitigating Anticipated Impact

The proposed development at St George's Barracks is likely to have a significant impact on the existing road network. Significant early modelling work has been undertaken to understand the impact of the proposals in more detail, resulting in the set of recommendations and requirements outlined here. The accompanying Transport Assessment (TA) contains further detail.

Local Network Improvements and Access

A key element of the Masterplan is the introduction of two new dedicated 'northern access roads' to serve the Business Zone and facilitate construction traffic associated with the scheme. This will negate the need for commercial or construction vehicles to pass through Edith Weston itself. Prior to the northern access points being brought into use, widening of Wytchley Road and improvements to the existing junction at Normanton Park Road will also need to be implemented.

As a direct result of the introduction of the new northern access routes, there will be added pressures placed on the A606 / Normanton Park Road junction which will require highway improvements in the form of a new roundabout, providing the additional capacity required to accommodate the increased levels of traffic travelling to and from the north of the development site.

Initial modelling results have also highlighted that a number of additional trips will be undertaken to and from Empingham. As a result, the study area has been extended to cover the A606 / Main Street junction which is the main route for vehicles travelling to and from the north.

The development site will benefit from residential access roads located from Pennine Drive and Edith Weston Road. These will require creation / enhancements of the access points themselves with associated pedestrian and cycleway improvements implemented concurrently along with traffic calming measures along Pennine Drive.

The cumulative impact of these new access points will necessitate the improvement of the existing Edith Weston / Manton Road / Normanton Road and Pennine Drive junction arrangements. These junctions will be assessed together to understand whether greater efficiencies can be achieved through the combination of the two existing junctions.

To the west, vehicles travel to the south of Rutland Water along Manton Road which continues into Lyndon Road on its approach to the A6003. Located on the brow of a hill, any physical improvements will be carefully considered. Modelling work is set to be undertaken to understand whether a roundabout can be physically installed at this location or whether traffic signals could offer a secondary solution. It is likely that some physical amendments to this section of the network will be required to facilitate the proposed development.

The A47

The associated traffic generation has been appropriately distributed to understand the proportion of traffic that will then impact junctions to the south and to the west. To the south, vehicles will travel south along Station Road until they reach the A6121 junction, formed of an existing mini roundabout. At this point, traffic is taken to the A47 via Station Road and the A6121 respectively. Both these junctions onto the A47 are likely to suffer an increased level of traffic during the peak periods and improvements are likely needed to create additional capacity. The A47 / Station Road junction may be modified to a roundabout while minor alignment

improvements are anticipated at the A6121 / A47 junction.

Strategic Road Network

There is likely to be an impact on the existing Strategic Road Network and discussions with Highways England will need to take place in due course. It is considered that a proportionate contribution towards an improvement scheme would be sought once the impact of the St George's Barracks development can be quantified and compared with the likely impact of background traffic growth during the Local Plan period as well as the impact of any future development at Stamford North.

Sustainable Travel Infrastructure

A key element of the transport strategy for the site is the introduction of a regular, connected public transport service. The development has been designed to provide a dedicated bus route through the site with a number of bus stops located within the recommended walking distance.

Improvements to the frequency of the existing bus service will be introduced with an amended route through the site to provide a realistic service to new and existing residents. This service will need to be pump-primed through its early years until it reaches a quantum of development (and subsequent uptake) that renders any service commercially viable. This will be front loaded and is likely to involve the provision of new buses, bus stop infrastructure including real time passenger information and smart payment methods.

In particular, direct services with Oakham and Stamford and Uppingham will be promoted to offer commuters a realistic sustainable travel option. Taster bus travel tickets will be introduced as part of the residential travel plan to try and influence individual travel patterns from the outset. It is considered that the improved bus services through the site will include the potential to capture existing settlements, providing a benefit to the wider community.

A park and ride facility is currently proposed to the east of the development site, adjacent to the employment zone, which will provide a tourist service to Rutland Water. It is envisaged that parking could provide for up to 150 vehicles, taking pressure of the existing car parks during peak periods, with regular shuttle buses providing direct connections with Rutland Water. Pedestrian and cycling links will be provided both within and outside the site to promote walking and cycling. Links to Edith Weston and Rutland Water will be provided along with the introduction of the appropriate crossing facilities.

2.2 Offsite Transport Infrastructure

A list of the required offsite improvements is provided below and Section 7 provides a breakdown of their costs, when the works should be designed and when this expenditure will then need to be incurred.

	Improvement
1	Off Site Highways Design / S278
2	Land Acquisition / CPO for northern access points
3	Two new northern access points
4	Wytchley Warren Lane widening
5	Edith Weston / Manton Rd / Normanton Rd and Normanton Rd / Pennine Drive Lane junction upgrade
6	Pedestrian / Cycle improvement linkages
7	Sustainable travel - pump prime bus services for first 10 years
8	New access onto Edith Weston Rd
9	Station Road / A47 - upgrade to a roundabout
10	Lyndon Rd / A6003 - consolidation and upgrade to roundabout
11	A606 / Normanton Park Road junction - upgrade to a roundabout

3. WATER AND DRAINAGE INFRASTRUCTURE

3.1 Mains Water

Current Situation

Severn Trent Water (STW) has confirmed that existing supply connections are located on the north and western boundaries, each of which has the potential to supply 5l/s from either point. It is currently assumed that the site is fed by a private tank and on-site network, based on information from STW.

Proposals

STW previously confirmed that their water supply network surrounding the site has some capacity to support approximately 250-350 additional domestic properties, but is wholly dependent on the wider Masterplan proposals in respect to existing supplies.

The network is therefore not capable of supplying the anticipated demand for the full development proposals without major off site reinforcement. The latest available cost for the reinforcement of the water - based on Ofwat regulated standard scheme infrastructure charges – is £872,330. This would need to be expended, with the capacity improvements in place by year 2/3 of the proposals.

3.2 Foul Drainage

Current Situation

The site is currently serviced by an offsite wastewater treatment plant within MoD land and serviced by Severn Trent Services (STS).

STS is part of Severn Trent Connect who are an inset wastewater company and considered as Statutory Undertaker, but without restricted geographical boundary of operation.

The foul drainage is piped to an existing treatment works adjacent to the River Charter. The capacity of the treatment works is noted as 375m^3 per day (dry weather flow) and 1,125m^3 maximum capacity. The estimated peak foul discharge rate from the proposed residential development is 103 l/s with an additional foul discharge of 10 l/s from the non residential elements.

Proposals

Severn Trent Connect have indicated that the existing wastewater treatment works can accommodate 2,900 people equivalent (PE).Based upon an average residential occupancy of 2.4 people, the capacity of the existing treatment works equate to approximately 1,200 units and generating a peak flow of 56 l/s.

Depending upon the phasing of the proposed development and the implementation of the different housing mix, the capacity within the foul sewer network could be split between commercial and residential development. The intention is, subject to decommissioning of the site, that the MoD would hand over the treatment works as part of handing over of the site.

Discussions are ongoing with Severn Trent Connect regarding a working agreement for interim maintenance and responsibility of the wastewater treatment plant after handing over from MoD and implementation of improvement and upgrading works to increase treatment capacity of the existing facilities to accommodate full discharge from the proposed development.

From the preliminary discussions held with Severn Trent Connect, the estimated cost for increasing capacity of the existing treatment plan is £1,500,000.

3.3 Flood Risk and Surface Water Drainage

Current Situation

There are existing surface water sewers servicing the disused airfield with an existing outfall into the ditch on the south western boundary of the site. The surface water drainage strategy is discussed in detail in CampbellReith's Flood Risk Assessment and illustrated on the drainage strategy layout. Similar to the foul drainage network, the asset is maintained by Severn Trent Services on behalf of MoD.

Overarching Strategy

The site lies within flood risk zone 1 and, as such, is at low risk of flooding. Surface water runoff from impermeable areas is to be controlled at source. Taking account of the site's geology and constraints, the following SuDS features are considered to be suitable for the site:

- Permeable paving;
- Rills;
- Swales;
- Detention basins; and
- Deep-bore soakaways

The topography of the site is fairly flat which potentially could limit the scope for a long linear drainage system with sufficient gradient. To compensate, drainage elements will need to be kept at shallow depths and use a combination of cascading elements to convey the overland flow towards the east of the site, mimicking the natural discharge paths.

Run-off from impermeable areas can be collected via permeable paving to then flow into the proposed rills, swales and detention basins as illustrated on the strategy layout.

Owing to the superficial geology of the majority of the site being clay, it is proposed to discharge runoff from the basins through deep bore soakaways into the permeable limestone below the clay layer. The soakaways have been indicatively marked on the accompanying strategy; their locations are subject to further ground investigations.

Due to the underlying geology in the north western area of the site, infiltration is unlikely to be feasible and as a result the surface water drainage strategy for that area would differ slightly to the rest of the site. The runoff from this catchment can discharge to a detention basin and then connect into the existing surface water network to the north west at a restricted Greenfield runoff rate (Qbar).

Severn Trent Connect have indicated that they would adopt sustainable drainage systems (SuDS) subject to those being implement in accordance with CIRIA guidance. The indicative adoption charges for surface water drainage features are £15 per cubic meter of storage onsite. Discussions are ongoing with Severn Trent Connect with regard to both the foul and surface water drainage elements

Key Documents/Drawings

- St George's Barracks Constraints Plan
- CampbellReith Flood Risk Assessment
- St George's Barracks Illustrative Drainage Strategy Layout: Drawing 12825/GIS016-A (CampbellReith)
- Surface Water Run-Off Catchments and Greenfield Run-Off Rates drawing (CampbellReith)

4. ENERGY INFRASTRUCTURE

4.1 Baseline Approach: Current Statutory Provider Requirements

Background

The baseline infrastructure requirements are based on the work completed to date through discussion and negotiation with the statutory utilities providers for this location. In effect, they are the minimum (or standard) infrastructure requirements for the provision of heat and power to the proposals, and assume that gas will be used to provide heat in the majority of cases.

The costs associated with the infrastructure – increases in capacity of the network in both cases – have been provided by Cadent (for gas) and Western Power Distribution (WPD) (for electricity). These costs have been used within the viability assessment, and trigger points for their delivery have been provided in the delivery programme in the final section of this document.

It should, however, be noted that the redevelopment of St George's Barracks is seeking to move away from fossil fuels, anticipate the decarbonisation of the Grid and embrace on site renewable energy systems and other associated technology. As such, our recommendation is to move away from gas as a heating technology, and use heat pump technology. Further details on the reasons for this decision are provided within this section.

Gas Network – Cadent Gas

The current network has sufficient capacity for approximately 20% of the likely demand from the proposed development, where gas is used as the main heating fuel.

The cost of the network expansion is provided below in Table 1. In terms of trigger points, this would need to be incurred by approximately the third year of residential development, but earlier commercial development also relying on gas would bring this forward.

Alternatively the costs associated with gas expansion could perhaps be used to facilitate the move away from fossil fuels, as indicated and described in more detail below.

Electricity Network – Western Power Distribution (WPD)

At the level of housing demand required it has been reported that the service will need to be drawn from the existing primary substation in Empingham (4km north of the site). At the loads required for the final Masterplan this will also require a new primary 33kV service and primary substation on or adjacent to the site.

In terms of trigger points for the provision of the 33kV service, this will heavily depend on the point at which the commercial development is brought forward. Without the commercial development in place, the trigger point would be around 500 housing completions, currently assumed to be in the third year of residential development.

However, appetite to bring forward commercial development – under RCC delivery – could be two years prior to this, and therefore it is expected to be an early capital expenditure item. It is therefore currently assumed that the primary substation will be required in 2021/22.

Estimated Costs

The following table provides a breakdown of the anticipated costs based on negotiations with Cadent and WPD to date: the 'Probable Actual' column provides the best level of confidence currently available

UTILITIES COSTS			
ITEM	POSSIBLE MINIMUM	PESSIMISTIC MAXIMUM	**PROBABLE ACTUAL**
Electrical Infrastructure	£6,490,000	£18,290,000	**£11,643,492**
Gas Infrastructure	£3,301,804	£4,500,000	**£3,301,804**

Table 1: Electricity and gas network expansion costs

Key Documents

- 20180719-7353 North Luffenham Services V1 (existing services drawing – CampbellReith)
- St George's Utilities Statement F1 (CampbellReith)

4.2 Preferred Approach to Energy Infrastructure

Energy Efficiency Performance Recommendations

The new community at St George's Barracks has been designed around Garden Village principles. Garden communities are, first and foremost, models of sustainable living. The TCPA argues that designing for climate change is the 'single biggest challenge we face in building new places'. As such 'new garden cities can be and must be exemplars of zero carbon and energy positive new development' and in order to achieve this 'energy and spatial planning must be fully integrated'.

The masterplanning process to date has very much sought to ensure that climate change considerations are fully integrated into the process, and this will need to be continued throughout the planning and construction process. The requirements of the statutory utilities described in Section 4.1 are very much 'standard' – based on estimates of demand from standard building projects. The RegenCo team has followed the application requirements of the network in order to establish the budget infrastructure costs that inform the viability and deliverability work. In effect these are the baseline from which the development can in principle be taken forward.

However, the ambition for St George's Barracks is significantly higher than this. The energy performance of the buildings will need to go well beyond the requirements of prevalent Building Regulations standards.

Building Regulations Performance Targets: Recommendations

Residential Development:
15% improvement against the prevalent Part L1a standard through energy efficiency measures alone (i.e. using a Fabric First approach).

Non-residential Development:
Achieve the prevalent Part L2a standard through energy efficiency measures alone (i.e. using a Fabric First approach).

How these targets are achieved will be up to the individual developer, however it is anticipated that the specification of the thermal envelope will be similar to the performance levels shown in the table below:

Element	Target U-value (W/m^2K)	Building Regulations Maximum
Roof	0.10	0.20
Sloping ceiling / room in roof	0.15	0.20
External walls	0.15	0.30
Party walls (filled and sealed)	0.00	0.20
Ground floor	0.12	0.25
Windows / glazing	1.4 (max)	2.00
Doors	1.1	2.00
Factor	**Detail**	
Thermal bridging	Average Ψ value = 0.06	Ψ (max) = 0.15
Air permeability	$3m^3/m^2/hour$@50Pa	$10m^3/m^2/hour$ @50Pa

Construction Methodology

This level of energy efficiency will require a high quality approach to construction on site. Whilst traditional forms of construction can – in principle - achieve this kind of performance, it may be that more innovative approaches would suit this development. Discussions with and research related to potential design-for-manufacture (or Modern Methods of

Construction [MMC]) providers has indicated that these performance levels are achievable, and competitive with traditional construction provided it is delivered **at scale** to drive economies at the factory.

The Housing Infrastructure Fund (HIF), which is being used to support the 'pump-priming' of much of the cost related to enabling infrastructure, is provided by Homes England. The HIF also seeks to drive innovation in the construction process whilst being used to further the strategic aims of Homes England itself set out in the Housing White Paper, including:

- Diversifying the housing market through SMEs
- Use of MMC (design for manufacture)
- Self-build

The proposals at St George's Barracks could and, as a result of the HIF, should enable all three of these elements to be implemented. Design for manufacture becomes more competitive at scale, the Masterplan contains an allocation for self build units, and the appointment of the LSDP could enable parcelling of development which is more attractive to the SME sector.

Moreover, SMEs could benefit from the MMC supply chain as part of a wider development through cost reductions driven by scale. Crucially, MMC can also help accelerate housing delivery numbers, and where high ('pent up') demand is anticipated, such as in Rutland, speed of delivery (whilst minimising disruption) is critical. The number of lorry movements during the course of construction will also be significantly reduced, as little as 10%-20% of those required for a standard construction approach, and can be planned to be concentrated into specific windows, to further minimise impact on the surrounding road network.

Whilst MMC is not a pre-requisite of incoming developers, very early consideration of construction options, at the latest during the planning phase, needs to be undertaken in order that the wider aspirations of the development can be achieved.

Supply of Heat

The baseline work with the gas network provides a standard route for the provision of heat within properties using gas boilers. The costs provided allow for the expansion of the gas network to serve the wider development.

However, over the longer term, the development must plan for a move away from carbon intensive fuel sources, including gas. As the decarbonisation of the Grid continues, the opportunity for using electricity as a primary heating source whilst minimising environmental impact increases. The large scale of implementation of building integrated renewables in the form of solar power, described above, also complements this approach.

Clearly though, this will need to be considered in the context of the ability to supply heat in a cost effective manner, whilst minimising long term operational and maintenance costs.

It is not proposed to install a district heating system on the development, however. The nature of the proposals, whilst in principle diverse enough to justify one, are of a density that does not necessarily enable cost effective installation of the network. Moreover, the development is being designed to minimise heat demands through highly energy efficient buildings, and therefore the quantity of the product sold through the network – heat – is insufficient to enable a return on the investment without additional revenues secured through increased standing charges.

Providing heat through electricity needs to be undertaken in the most efficient manner possible, and heat pump technology is therefore proposed as the preferred solution instead of gas. Heat pumps will have the following benefits:

- The ability to extract maximum heat from incoming supplies with efficiencies in the range of 350%
- As low temperature systems, they are particularly suited to low energy buildings where heat is more effectively retained within the structure
- Complementary to the PV systems installed (see next section)
- Ability to jointly commission with smart controls for more effective management of the Grid and peak power demands
- The potential to provide comfort cooling efficiently in an expected warmer climate
- Where coupled with an incoming 100% renewable energy supplier will lead to carbon neutral development. Whilst choice of supplier may change there is value in commencing supply with a renewable supplier to encourage residents to continue in the same vein in the future
- Where required from the outset, an infrastructure bill saving will be realised – related to the offsetting of the current c.£3.3m gas network enhancement costs which will no longer be needed

Supply of Heat: Recommendations

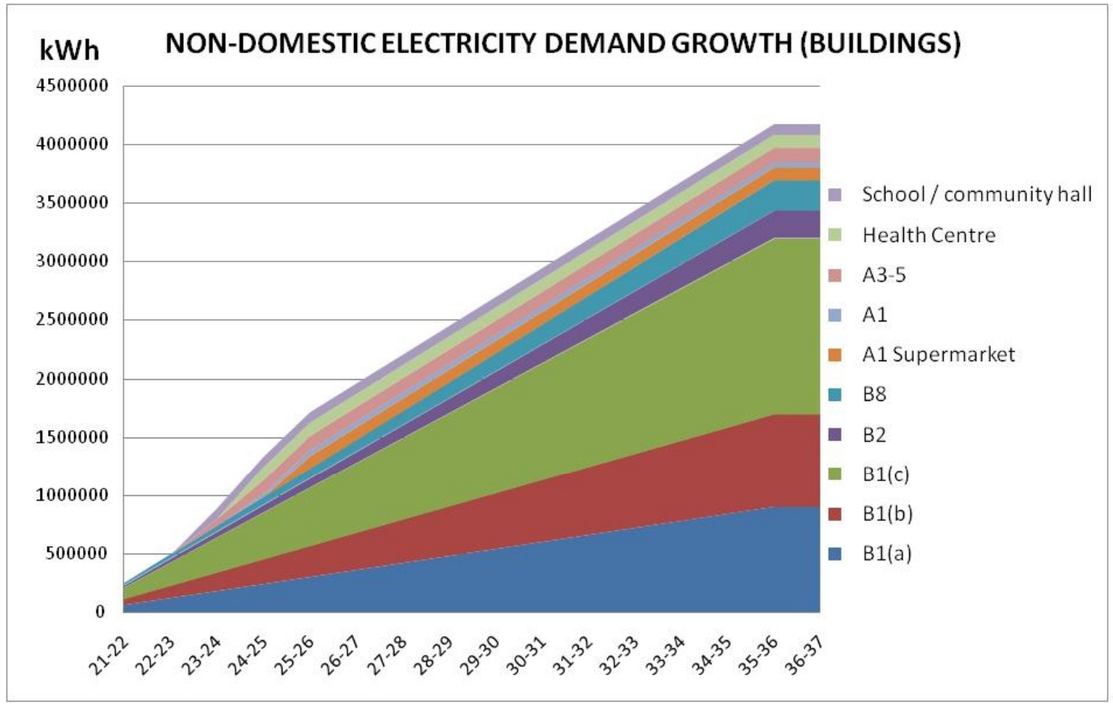
The development needs to acknowledge and anticipate future needs as well as the opportunities arising from technological change. The longer term impacts of climate change, and the need to provide buildings which can adapt in a much warmer climate, need full consideration from the earliest stages of design.

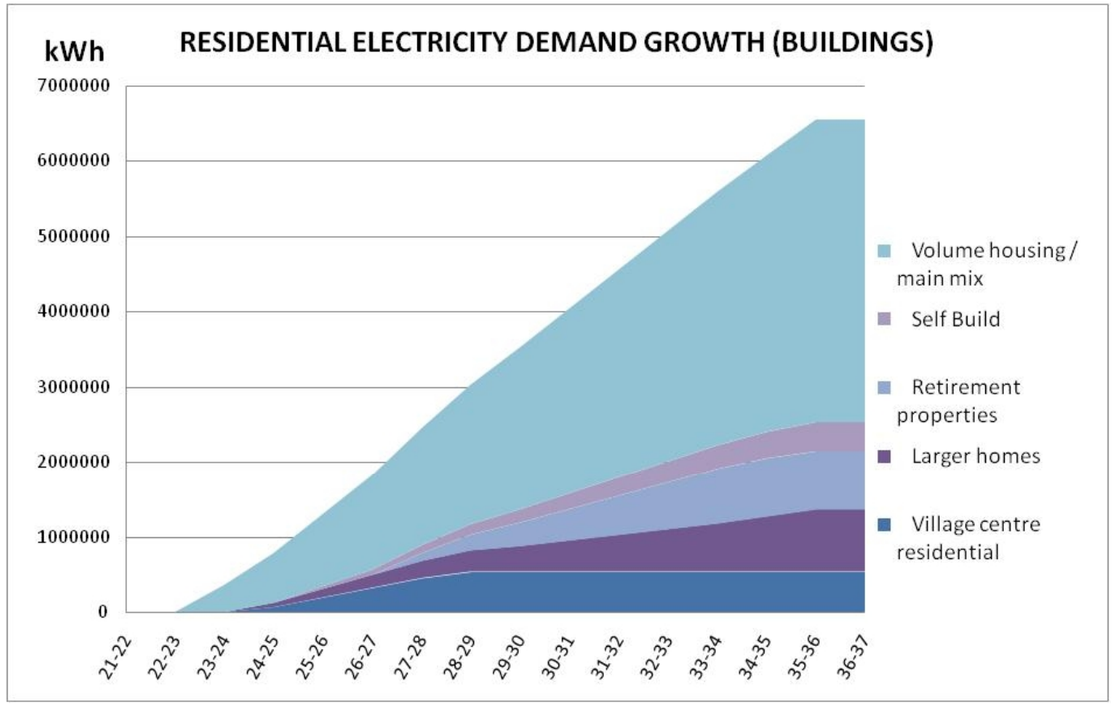
Long term reliance on fossil fuels is no longer acceptable, and heat pump technology should be considered the first choice for heat supply.

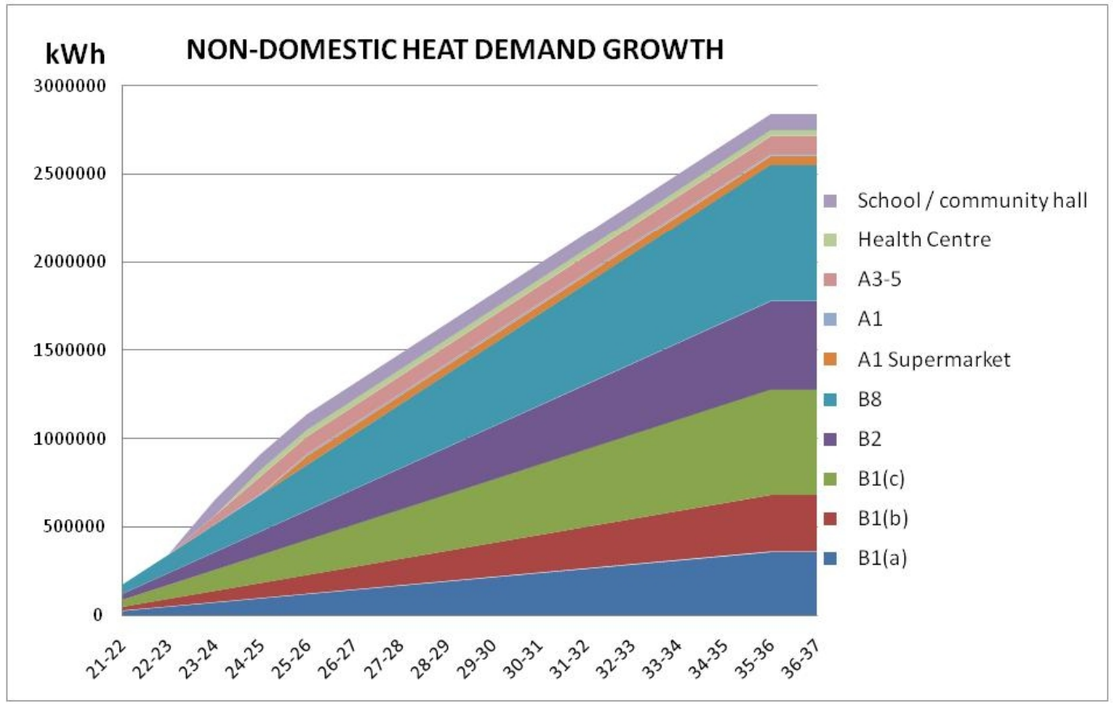
Housing layouts – both plans and mechanical/electrical designs – should facilitate the installation of heat pump technologies for both external and internal aspects of the system.

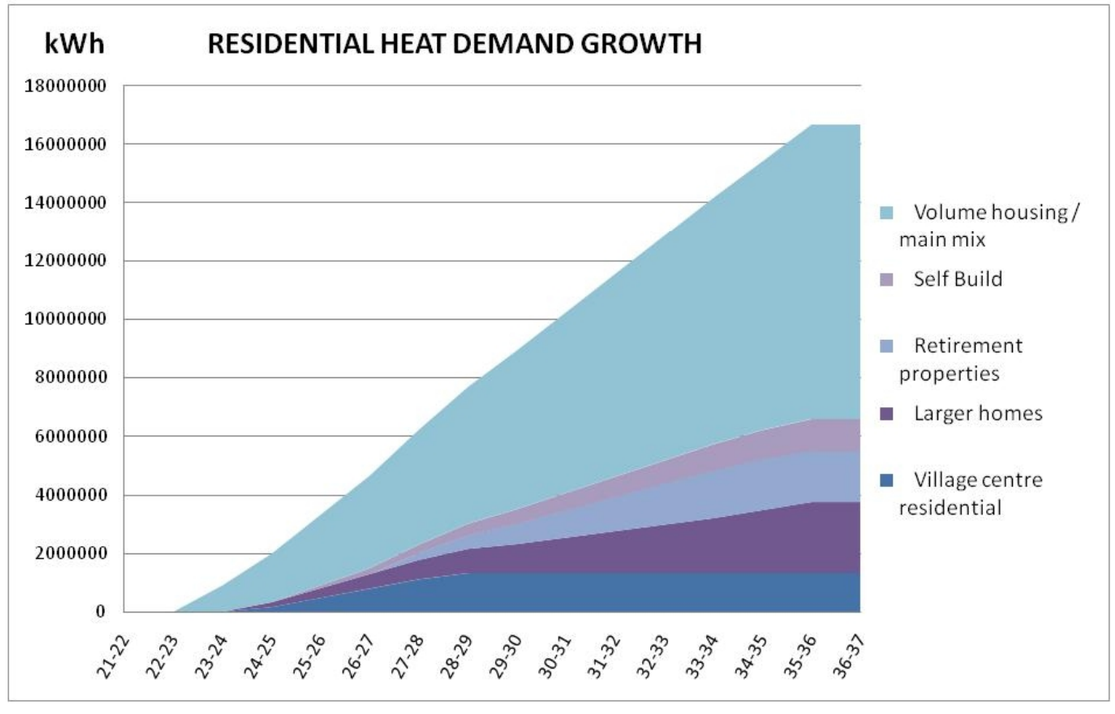
Specific consideration must be given to heat distribution options within buildings that are compatible with heat pump technology.

Estimated Energy Demand Growth Profiles









Building Integrated Renewable Energy Infrastructure

Beyond the energy efficiency requirements above, all new development will also integrate renewable energy systems with the effect of:

- Further reducing operation costs (energy bills) for residents and businesses
- Significantly reducing carbon emissions related to the development
- Reducing reliance on the existing network/Grid
- Providing potential revenue streams for the community

The choice of technology will be roof integrated photovoltaic panels or tiles. There should be no 'on-roof' systems within the proposals. All systems will be discreetly designed to minimise visual impact. The use of PV as a roofing product, rather than as a component integrated into the roof, becomes increasingly viable once cost savings associated with roofing materials are included in the equation.

Examples in the Netherlands have demonstrated a €50-60/m^2 saving in roofing costs for developers from such systems, which can also be fitted in factory, where design for manufacture is chosen as the construction method.

In addition, and wherever possible, buildings should be designed to enable a southerly oriented roof space. However where this is not achievable for design and layout reasons, east/west panels systems can and should also be installed. This in fact has the added benefit of providing a more even pattern of generation throughout the day.

Residential

The following schedule provides the indicative quanta of PV required for the different house and building types within the Masterplan. The areas assume 250W panels rather than tiles, but where tiles are implemented the output (kWp) should remain the same.

On the basis of the current proposed development mix, this equates to a weighted average of 2kWp per property, or 4.43MW of PV capacity in total.

Residential, Building Integrated, Renewable Energy Recommendations

House/Building	PV System (kWp)	PV System (No. panels)	PV System – m^2
Flats	Roofscape dependent – however a minimum of 1kWp per property should be sought.		
1 Bed House	1.5	6	11
2 Bed House	1.5	6	11
3 Bed House	2-2.5	8-10	14-18
4 Bed House	2.5-3	10-12	18-22
5 Bed House	2.5-3	10-12	18-22

Non-residential/commercial
From a non-domestic perspective it is estimated at this early stage that around 40,000m^2 of roof space will be built, excluding the village centre retail development which is anticipated to have residential development above. Using the broad assumption that 45% of this is usable space for PV, 18,000m^2 of space will be available for electricity generation.

There is therefore the ability to comfortably install 2MW of PV panels within the development without the need to use a ground mounted system.

Further opportunities for energy – and revenue – generation could also be exploited through the provision of the park and (bike) ride facility. The use of solar canopies / shelters has multiple advantages, including:

- Protecting vehicles from overheating
- Sheltering users from rain
- The value of the energy generated presents a number of commercial opportunities for the landowner, through lease payments, power purchase arrangements and Grid Services
- The ability to co-locate EV charging and energy storage facilities

The park and ride facility is currently 0.5Ha, and on that basis will accommodate spaces for 150 cars. Typically, a solar car park will generate around 2kWp per parking space, which would provide an additional 300kW of peak power, equivalent to around 240MWh of energy per year.

Exploiting the Opportunities for PV

It should be noted that the table below is a conservative estimate of the potential of building integrated PV, and that in practice higher levels of output should be achievable subject to suitable finance and management arrangements being put in place (see Energy Services section below).

St George's Barracks presents a real opportunity to exploit a proven technology characterised by falling costs, against a backdrop of a rapidly changing car industry whilst protecting against rising energy prices. Coupled with energy storage (of which more detail further on), its introduction will help future proof the development and mitigate the need for further Grid expansion.

Photovoltaic Recommendations
This technology should be widely exploited and the table below provides the minimum peak outputs that should be sought as part of the development.

Source	Peak Output (MW)	Annual Energy Generation (MWh)
Residential Buildings	4.43	3,544
Non-residential Buildings	2.00	1,600
Park and (Bike) Ride	0.3	240
TOTAL	**6.73**	**5,384**

Energy Services Provision

The nature of the supply of energy within the UK is rapidly changing; it is moving from a system of large scale, centralised power generation to a more distributed generation system which capitalises on renewable energy and storage technologies. St George's Barracks will be a living example of this evolution, with substantial local energy generation embedded within the development. Such assets, however, are not typically owned by the Grid, or the Distribution Service Operator (DSO) - the latter being Western Power Distribution in Rutland.

There is an important role to fill, therefore, in being the interface between the network, the energy assets, and the energy users - one which is typically fulfilled by specialist energy services providers. In some cases, local authorities have begun to take on this role, such as West Sussex County Council, Southend, Nottingham and Bristol. The exact role an energy services provider would fulfil will need to be identified and agreed over time, but we would expect this to include:

- system design and contracting
- smart control systems implementation and operation
- securing necessary financing
- managing interface with the Grid, and securing revenue streams from Grid services
- guaranteeing an income stream for the community to be managed in conjunction with the long term stewardship body (of which more below)

A truly innovative approach would be to secure direct, long term energy supply and metering services to individual buildings / residents. This would require such a relationship to be covenanted as part of the sale, however in doing so would open a range of long term technological opportunities to develop, including:

- enabling energy trading between residents and half hourly / net metering (subject to regulatory change)
- lifecycle replacement with more efficient technology
- Grid services at community scale (time shifting of demand, frequency response, enhanced on site use of generated renewable energy, etc) along with further financial benefits for residents
- smart management of power for low cost vehicle charging
- smart management of heat

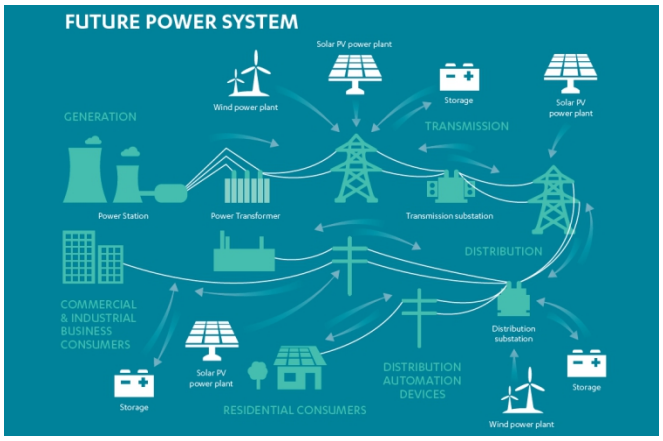


Figure 1: the transition of the UK energy network (*courtesy of the NIC's Smart Power Report, 2016*)

Energy Services Recommendations

The appointment of the LSDP should require responders to demonstrate how the development will go above and beyond the standard approach to utilities provision including:

- how the development will be future proofed in terms of energy supply
- what specialist service provision / support will be put in place to deliver this
- how / what benefits will accrue to the community over time (and how this will interact with long term management and maintenance of the development by the stewardship body)

4.3 Future-Proofing Development: Recommendations

Electric Vehicles (EV)

In line with the requirements of and discussions with WPD, we have assumed an initial uptake / allowance of 20% of the residential properties, and 5% of the typical non-residential parking allocation, will require EV charging. An allowance for fast (rather than standard) charging – 8kW charging points – is included.

At a strategic (and national) level, significant additional peak capacity in the Grid, or far 'smarter' network management, or a combination of both, will be required to facilitate the anticipated growth of electric vehicles. WPD is undertaking a range of consultation activities to understand the implications with the aim of designing a network that can cope with this change.

However, the proposed development at St George's needs to anticipate these requirements **now**, and ensure the design of infrastructure is future-proofed to enable greater EV charging capacity well above the initial 20%. In fact, charging capacity and facilities for 100% of the residential properties is likely to be required only 10 years after the completion of the final homes.

EV Infrastructure Recommendations

All residential properties will be designed to enable the easy installation of rapid, 7-8kW charging points which can also be smart / remotely controlled. Electrical layouts of properties should be designed for and demonstrate charging locations.

The option of pre-installing the charging point must be notified to incoming residents and implemented on request.

Standalone Renewable Energy Systems

The Masterplan consultation process discovered an appetite from some members of the community to capitalise on the amount of available space to install a ground mounted PV 'farm'. At this stage there are no plans to implement such a plan as a result of the constraints and uncertainties related to the minerals extraction area. There is insufficient clarity on the timing of the extraction process, and investment in a PV farm requires certainty in terms of the longevity of the plant in situ.

However, the option to install a facility remains, subject to more detailed discussions with potential mineral extraction companies, and this would also provide an income stream to the MOD in relation to offsetting the holding costs associated with the undevelopable area.

Standalone Renewable Energy Recommendations

It is recommended that the owner/operator of the commercial areas – which could be Rutland CC – explores this option further with potential operators as the planning phase of the development commences.

Where feasible, it would make sense for this to be operational as part of the proposed Phase 1 of the development. As a rule of thumb, around 5 acres / 2Ha of land are required per MW of ground mounted PV farm.

The Masterplan extract below provides an indication of the areas most suited to installation, based on proximity to the site's Grid connection points and location of any energy storage infrastructure (see next section).

Figure 2: Additional PV and Energy Storage Locations

Energy Storage

Energy storage will be the means by which the new community can embrace technological change without impacting on the Grid. The cost of storage continues to decrease and new storage capacity in 2018 can already be installed for less than the $300/kWh, previously identified as the level at which it becomes financially viable.

By providing energy storage on site, we can overcome the requirement for further additional Grid expansion once the anticipated rapid EV take up occurs. It will also enable an earlier and comprehensive move away from gas towards a heat pump driven solution, and furthermore enable more of the energy generated within the development to be used before exporting back to the wider Grid.

We have undertaken some early analysis of energy storage options, on the basis of an overall storage capacity which could either be located centrally or within individual units, or both. The sizing and design will ultimately depend on the configuration of the arrangements for the provision of energy services, and the design of the new network infrastructure.

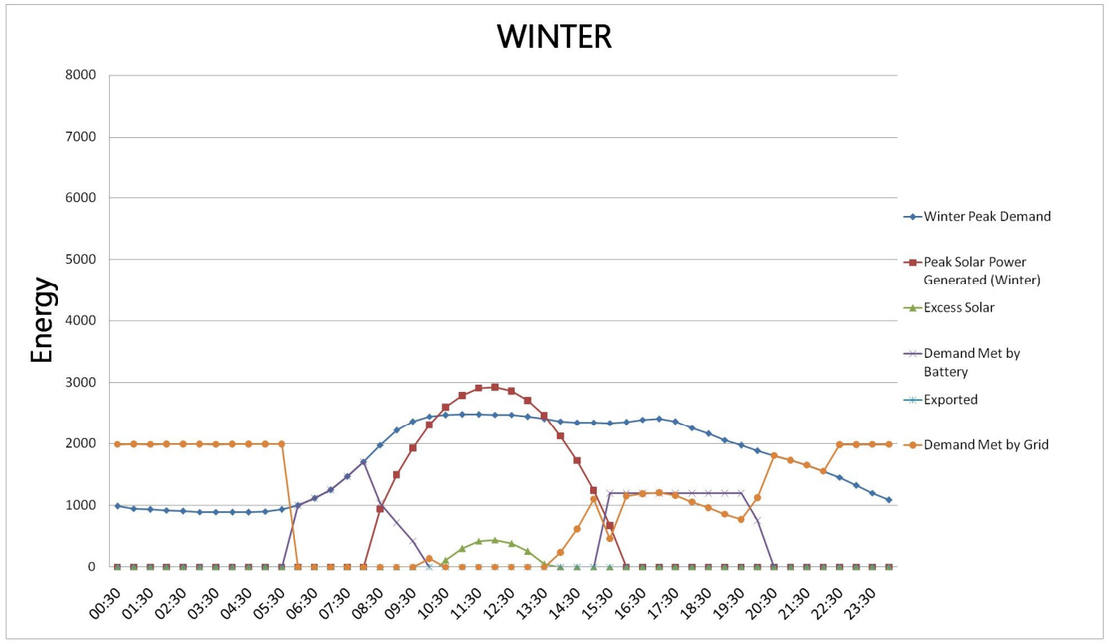
It is too early in the process to be specific about exact sizing and specification – however a more detailed assessment should form part of the planning application process and the next stage of discussions and negotiations with both WPD and potential service providers.

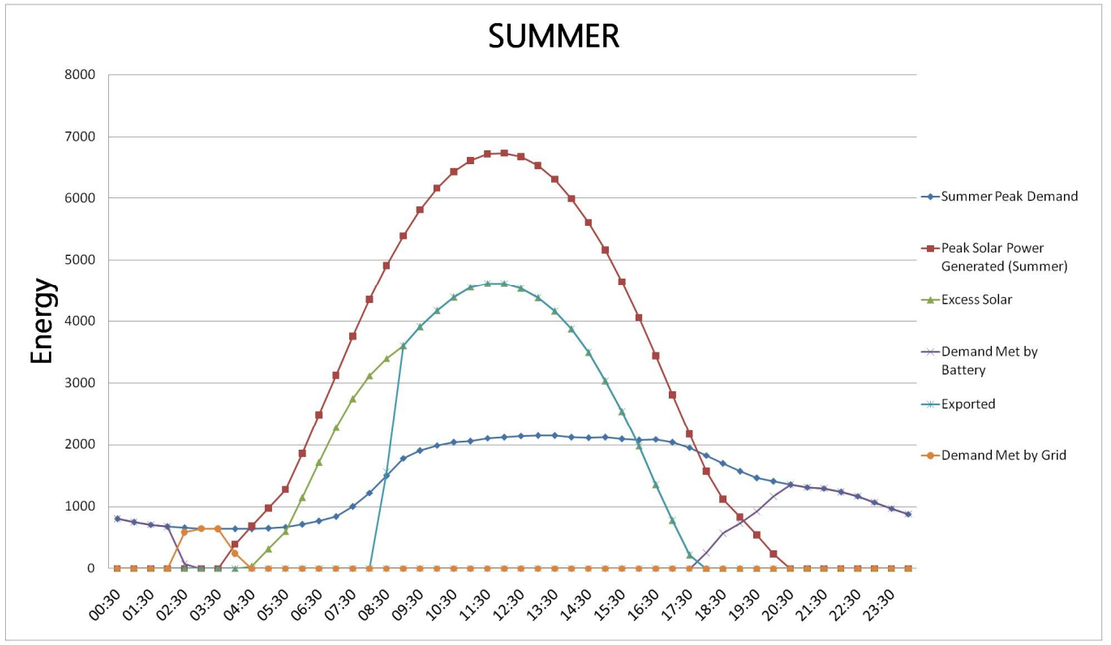
The next set of diagrams show the potential seasonal impact on the demand from the Grid (orange line) of introducing around 16MWh of storage capacity into the proposed energy mix. The diagrams assume peak operation (i.e. a clear sunny day). There are a plethora of different Grid services with different values that can be provided by the energy storage system, and in due course and once more detailed mechanical and electrical design is underway, a storage system can be optimised to ensure maximum financial viability. This will need to be undertaken in conjunction with a specialist operator.

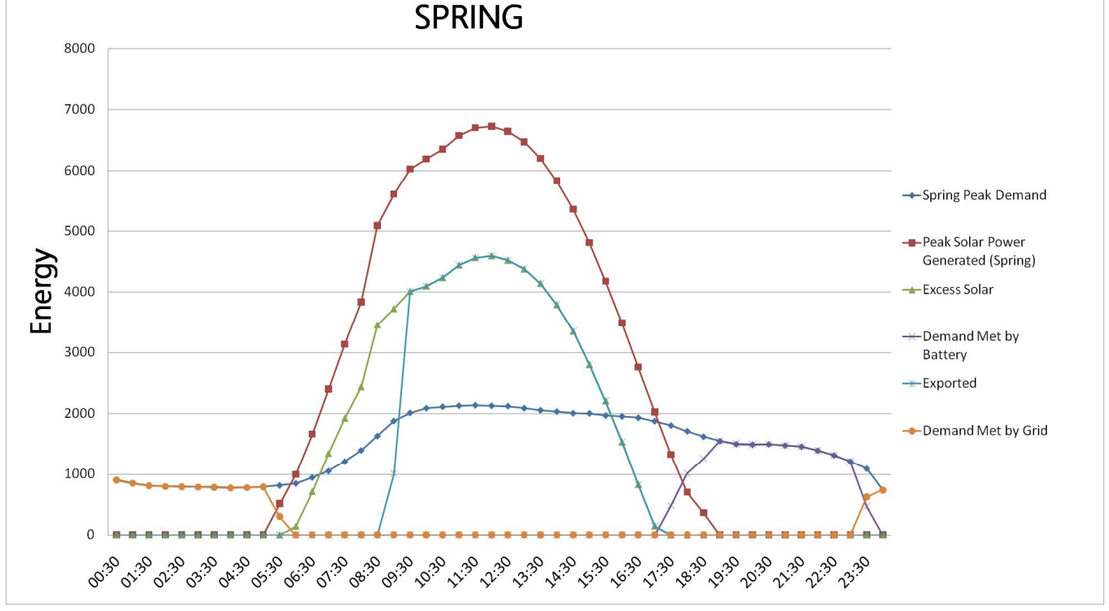
Energy Storage Recommendations

The use of energy storage provides the final piece of the 'energy jigsaw' for the St George's Barracks development. It will underpin the sustainable expansion of electric vehicles, minimise impact on the wider network, maximise the benefits from on-site PV, and provide longer term income streams into the development. In this context:

- Procurement of the LSDP should require proposals for the delivery of this infrastructure and associated provision of energy services (where not undertaken by Rutland County Council or the MOD)
- Space for larger storage devices should be maintained within the commercial area to the north east of the developable area
- Housing layouts should be designed to include space and services connectivity for building integrated storage devices for future installation
- The Park and (Bike) Ride solar canopies as well as any ground mounted solar PV (where taken forward) should be fully integrated in to the system
- Further engagement with WPD should be undertaken at the earliest opportunity to ensure viable connection to the Grid, and continue to seek reductions in costs associated with primary infrastructure







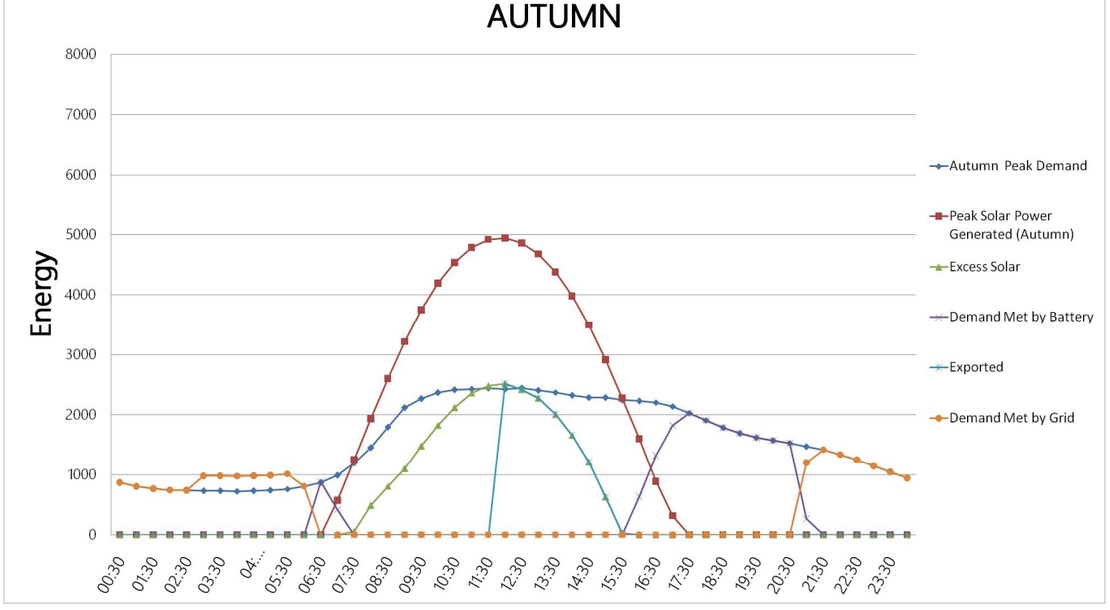


Figure 3: Illustrative impact of solar PV and energy storage on Grid energy demands

5. IT &BROADBAND INFRASTRUCTURE

5.1 Openreach and Fibre to the Property

In line with the Masterplanning aims, the requirement is for the provision of Fibre-to-the-Building for every property on the development as a minimum. This will enable a host of additional development functionality: home working, smart energy control and system management, enhanced commercial attractiveness, smart transport systems, etc.

As part of the statutory applications, Openreach were approached in relation to the proposals to understand the costs of implementing new communications infrastructure on site. Openreach have confirmed that there is no exchange equipment located onsite, to their knowledge, that needs recovering prior to the re-development.

In order for the removal of existing cabling onsite to be carried out easily and not to damage the network off-site they would need to disconnect the cabling at node points near the site perimeter prior to removal onsite, the estimated charges for this would be c. £50,000.

For the redevelopment of the commercial element of the site, including office accommodation, Openreach would need to install fibre optic cabling to a central location at the cost of approximately £200,000.

Housing would then be connected to the FTTP network, which is free to developments over 30 homes. The current estimate for the Telecoms Infrastructure cost is therefore £250,000.00 for the development.

IT Infrastructure Recommendations

All properties will be provided with fibre to the property / home to ensure maximum available internet connection speeds. It is essential that this infrastructure is provided as without it many of the wider, futureproofing (and community revenue generation) opportunities will not be feasible.

There is no major barrier to implementing this as Openreach provide the connections free of charge.

6. LONG TERM MANAGEMENT AND OPERATION

6.1 Introduction

The development at St George's is being designed in accordance with the principles of a Garden Village.

Delivering effective long-term stewardship is a key principle of the garden village model and the role, governance and structure of the stewardship body (SB) will influence how certain forms of infrastructure and community facilities are financed, and vice versa.

With the right model in place, the stewardship body should be financially self- sustaining, which is essential at St George's Barracks in ensuring high quality community infrastructure and landscaped areas are maintained in perpetuity.

This section of the IDMP therefore considers:

- Possible organisational models for the stewardship body
- Options and considerations for an appropriate legal framework
- The specific situation at St George's which will ultimately influences how the stewardship body model is chosen and designed

6.2 Organisational Models

The *organisational model* describes the type of business or activity undertaken by an organisation; its relationship with its members; its ethos and values; and the sector in which it operates.

The emerging Local Plan for Rutland 2016 – 2036 (July 2018) includes a policy section for the 'St George's Garden Village' which refers to the establishment of a **Community Trust** for the community with residents and Parish Councils as Trustees.

Rutland Local Plan Policy RLP – St George's Garden Village

The finalised and agreed masterplan must demonstrate how it will deliver a sustainable new community based on the following Rutland Garden Village principles:
(…)
3. ***Establishes a Community Trust*** *(which will be transferred to the new community with residents/ Parish Councils as Trustees) to ensure the creation of a flourishing and vibrant community, making it a place where people want to live and work in the future.*
(…)
These principles should be embedded into the planning, development, delivery and ongoing lifetime of the community. Community infrastructure will be provided for the first phase of development to ensure new community can develop from the very start.
(…)
Proposals will need to demonstrate how they will avoid, minimise and where necessary mitigate or compensate any adverse environmental impacts and how they will meet all of the following criteria:
(…)
g). ***the establishment of appropriate liaison and governance solutions by identifying the ways in which inclusive and continuous engagement, joint working and long-term stewardships can be secured to deliver this unique and exceptional Garden Village development****.*
(…)

While the policy specifies a 'Community Trust', a stewardship body can in fact take several forms. Considering the specific nature of the proposals at St George's Barracks and the current policy included within the emerging Local Plan for Rutland, the options below (summarised from the TCPA guidance document *'Built Today, Treasured Tomorrow: A Good Practice Guide to Long-Term Stewardship'*) have been identified as

being of most relevance.

These are all organisation models that can be applied to incorporated bodies: the size and planned activities of the SB for St George's means that an unincorporated organisation would not be appropriate.

It should be noted that several of the following organisational models are legal entities in their own right (for example Community Interest Companies), while others (such as Development Trusts and Community Land Trusts) can adopt different legal forms, depending on the activities they are undertaking and what the organisation is aiming to achieve. Appropriate legal frameworks are discussed in the next section.

TYPE	DESCRIPTION
Management Companies	Set up to manage assets as part of a development. Membership/ownership of the companies is very often extended to residents, who become members or shareholders, depending on the constitution of the company. They are sometimes called community trusts or development trusts (see below). The extent of participation in the management and executive functions of the company depends on the terms under which the company is established – usually, the ultimate control of assets and expenditure is not passed across to residents until the development is complete, with the developer holding 'golden shares' and weighted voting rights until that time.
Development Trusts	Community organisations created to enable sustainable development in their area. They use self-help, trading for social purpose, and ownership of buildings and land to bring about long-term social, economic and environmental benefits in their community. They have no legal definition and can adopt a range of constitutional forms and business models. A community development trust can demonstrate self-sufficiency where its financial model is to use income generated from the operation of community services, facilities or amenities and invest it back into a trust fund for use solely by the community development trust.
Community Land Trusts (CLTs)	These are non profit, community-based organisations run by volunteers that develop housing, workspaces, community facilities or other assets that meet the needs of the community. They are owned and controlled by the community and are legally defined, but are not a legal entity in their own right.
Other types of trust	A trust is a way of holding assets that separates legal ownership from economic interest. Assets are usually owned by trustees and managed in the interests of the beneficiaries according to the terms of the trust. Trusts can be unincorporated or incorporated.
Community Interest Companies (CICs)	These are a special type of limited company which exists to benefit the community rather than private shareholders. CICs are set up to use their assets, income and profits for the benefit of the community they are formed to serve, and must embrace special features such as an 'asset lock', which ensures that assets are retained within the company to support its activities or otherwise used to benefit the community. The CIC is particularly suitable for those who are not aiming to make profits for individuals but do not want the administrative or governance burden of taking on charitable status. They are more flexible than some other legal forms, and there are a variety of capital structures available to meet the needs of members and the organisation.
Industrial and provident societies	These are organisations conducting an industry, business or trade, either as a cooperative or for the benefit of the community.
Cooperative societies	These are run for the mutual benefit of their members, with any surplus income usually being reinvested in the organisation to provide better services and facilities. They often take the form of an industrial and provident society (see above) but can take a number of different legal forms. There are a number of different types of cooperative society which differ according to their core activity (for example housing cooperatives, consumer cooperatives, worker cooperatives), but which are all based on the same legal structure.

Table 2: Types of Stewardship Body (adapted from *'Built Today, Treasured Tomorrow: A Good Practice Guide to Long-Term Stewardship', TCPA)*

Ultimately, the most appropriate structure for St George's will need to be identified as part of the process negotiations for the appointment of the LSDP as the LSDP would be expected to be part of the governance arrangements of the SB until at least the point where the development is completed. There will then be opportunity to refine and fix the model – including gradual transfer of responsibilities to the SB - during the planning and associated Section 106 negotiation process.

6.3 Appropriate Legal Framework

Choosing the correct legal structure goes a long way towards making an organisation run effectively.

The term 'legal framework' combines an organisation's legal form (what sort of body it is in the eyes of the law) and the governing document (a written statement that lays out how the company will operate and govern itself).

There are several legal structures that the SB can adopt, the main types being:

- Trusts (charitable or otherwise)
- Limited companies (limited by shares or guarantee)
- Community interest companies
- Charities, or charitable incorporated organisations
- Cooperatives
- Industrial or provident societies

These are not necessarily mutually exclusive, and a combined bespoke approach may be the most appropriate for the development at St George's Barracks. The table below, summarised from the Cooperatives UK guidance document *'Simply Legal: All You Need to Know about Legal Forms and Organisational Types'*, provides a summary of key features of the different legal entities.

On the basis that an asset lock is important, and that some controlled flexibility is required in terms of additional third party/member investment in the future, then the options have been colour coded / ordered as the basis of a *potential* preference. However, **further legal advice will need to be sought to ensure any preferred structure is the most applicable for the community**, and it may be the case that a bespoke legal form may be required.

Legal Form	Do its members have limited liability?	What is its governing document called?	Can it issue shares?	Can it pay a return on share holdings?	Does it have to register with a regulatory body?	Is it suitable for charitable status?	Does it have an asset lock?
Industrial and Provident Society (society for the benefit of the community)	Yes	Rules	Yes	Yes	Financial Services Authority	Yes	Yes (optional)
Community Interest Company (Ltd by Shares)	Yes	Articles	Yes	Yes – subject to a cap	Companies House and CIC Register	No	Yes
Community Interest Company (Ltd by Guarantee)	Yes	Articles	No	No	Companies House and CIC Register	No	Yes
Industrial and Provident Society (bona fide cooperative)	Yes	Rules	Yes	Yes	Financial Services Authority	No	No
Trusts	No	Deed	No	No	No (unless a charity)	Yes	No (unless a charity)
Company Limited by Guarantee	Yes	Articles	No	No	Companies House	Yes	No (unless a charity)
Associations	No	Consortium	No	No	No (unless a charity)	Yes	No (unless a charity)
Charitable Incorporated Organisation	Yes	Constitution	No	No	Charity Commission	Yes	Yes
Company Limited by Shares	Yes	Articles	Yes	Yes	Companies House	No	No (unless a charity)
Partnership	No	Deed	No	No	No	No	No

6.4 Considerations for St George's Barracks

When designing the most appropriate SB structure, a number of factors need to be carefully considered, including proposed roles and responsibilities of the body; likely funding and revenue streams; timing; liability, ownership and the control of assets (shares, membership, cooperative, etc); profit/surplus distribution; and tax liabilities.

While this is process that will evolve as the procurement, planning and development process continues, some key issues and considerations are presented below.

Roles and responsibilities

What falls within the remit of the SB at St George's Barracks remains to be confirmed. It is currently assumed, however, and subject to sufficient revenue streams being generated, that the body will take on responsibility for:

- Overall management and administration for the SB, including acting as a voice for the community vis-a-vis Rutland County Council and neighbouring parish councils
- Operation and management of the community and leisure facilities (including sports pitches and associated buildings)
- Organisation of community events, groups and networks
- Ongoing maintenance and of the open space, landscape and play areas within the developable area
- Over time, the country park, heritage and ecology zones

Subject to development, it may also be that the body will take on ownership and operation – in association with a specialist company – of site specific energy infrastructure (such as energy generation and storage facilities).

The SB will also need to be flexible enough to evolve overtime to ensure that the services offered continue to be relevant to the demographic of the area.

Funding and Revenue Streams

The long-term success of the development will depend on securing a blend of sustainable income streams into the SB to pay for the maintenance of the various assets. It is currently anticipated that the following revenue streams will be available for the SB, so the governance arrangements will need to be designed so it can adequately access and manage these.

Revenue Stream	Description	Issues and Considerations
Commuted sums from the planning and development process	The Planning Obligations and CIL SPD states that developers will be required to make provision for maintenance of public open space. Where developers wish to transfer ownership and future management to the Council or other body, they will be required to maintain the open space for a period to be determined by the Council. This will not be expected to last for less than 24 months. The Council (or in this case, SB) will be paid for the adoption and on-going maintenance of open space. *Section 106 agreements* will be used to secure capital funding for infrastructure, including the community assets. It may also be possible to secure revenue funding for the ongoing management of the community assets. This could be in the form of a cash endowment of an endowment of land or property. *Community Infrastructure Levy*: Rutland County Council adopted CIL in March 2016 and is chargeable at a rate of: £100 per sqm for residential £0 for sheltered housing and extra care housing £10 for distribution £150 food retail (supermarkets) £75 retail warehouses	Timing is key to ensure funding contribution agreements are in place through Section 106 and – if and where relevant – CIL. It is anticipated that commuted sums will be secured from both the residential and the commercial developers through commuted sums to cover the following: - Landscape and open space within the developable area, including LEAPs, NEAPs and LAPs - The Heritage and Ecology zones, as well as the country park for the period during which the minerals extraction is not being undertaken - Sports pitches The amount of commuted sum is assumed to be equivalent to that which would otherwise be paid to Rutland County Council if a 'standard' adoption approach was to be secured. It has also been assumed that receipt of the payment would be phased in line with the wider phasing of development.
Land Value Capture	Enhanced land value is created through betterment – the increased value of land derived from the grant of	The site is in single public ownership belonging to the MOD. This facilitates a land value capture model

	planning permission, the provision of facilitating / strategic infrastructure works, and de-risking of development. Further uplift may be seen from enhanced values associated with residential and commercial development as the new community is developed. A land value capture mechanism seeks to secure part of this land value uplift to pay for the necessary supporting infrastructure and site preparation works for a development.	without the complexity of land assembly or profit distribution to multiple landowners. The MOD has indicated its preliminary intention to select and appoint an LSDP who will be responsible for obtaining planning permission, preparing the site for redevelopment and delivering supporting infrastructure including transport mitigation, utilities upgrades, community infrastructure and strategic landscape in accordance with the Masterplan. These works will be paid for from a combination of private finance sources and public grants / loans (including Housing Infrastructure Funds, if secured). The delivery partner will then sell serviced land parcels to developers at an enhanced value due to the betterment achieved, and use the income to repay the infrastructure costs, any public loans and provide a land receipt to the MOD. Therefore, whilst the SB will not **directly** benefit from Land Value Capture, it is currently assumed that a small financial endowment (payment) will be made into the SB for each completed property by the developer. This will effectively help 'pump prime' the financial basis of the SB as the development grows, and once occupied will be sustained by the annual charges (described in more detail further below). The residential financial endowment will be a fixed sum depending on the property type, and the

		commercial financial endowment based on a m^2 rate, both payable on practical completion the property.
Commissioning of 'Interim' Services	There is no confirmed date as to when the minerals extraction would be undertaken, and given the value of the extraction is it assumed the MOD would retain ownership of that proportion of the site until the rights are sold. Passing the responsibility for securing and managing that portion of the site to the LSDP may not be the right way forward because: - That portion of the site need not necessarily be secure – the ethos is to open it up as much as possible and use it for the benefit of the community - The costs of securing a potentially large area will – to an extent - be detrimental to the viability assessment and residual land value - It may be off-putting to potential LSDPs who could see it as too great a liability and/or cost and/or hassle - The lack of clarity on the length of period during which it would need securing and maintaining adds risk that could be better managed through another solution The management of the non-developable area, primarily the minerals extraction area, could be therefore allocated to the SB, to minimise holding costs. The MOD would need to commission the SB to perform this service until the point where minerals	It appears to make sense to allocate the responsibility for management of that land into the SB, under flexible terms to enable that maintenance responsibility to cease for the period during which extraction occurs. And of course to potentially reinstate that responsibility once fully remediated. The reasons for including it in the SB's remit include: - It already ties in with the wider landscape responsibilities within the developable area which we expect the SB to accept - As an openly accessible area it will not require security and the associated costs. The Holding Costs for the LSDP will then relate solely to the developable red line, which would be more attractive - It shouldn't be a complicated or difficult management exercise given the nature of the area, and is therefore more suited to the likely SB 'skill set' - It enables a more comprehensive, clear & integrated landscape management plan to be implemented There are three further considerations at this stage: - Timing: the SB will not necessarily be fully 'up and running' when the LSDP takes on the site, so short term interim arrangements may be needed for a year or two whilst the SB is fully

	extraction was underway, and also once complete.	established. - Cost: irrespective of who manages it, it still needs to be paid for. If it is not the LSDP, then it is the MOD (as beneficiaries of the extraction rights and owner of the land) – who will need to make financial provision and pay the SB the cost of doing so (a cost which could, in part, be recouped through the sale of the rights themselves potentially). - Remediation: any service costs will need to be balanced against any remediation costs needed to open up that area to the public and enable the SB to manage it.
Annual service charge: residential property	This element is effectively the core funding for the SB, and provides its sustainable financial basis. The rate charged will differ depending upon the size and type of dwelling.	Leaseholder Reforms currently being considered by Government may have an impact here, however to covenant this payment as part of freeholder sales should be achievable. Without this revenue stream the SB will not be able to properly function and is unlikely to be financially sustainable. Social housing on the site, operated by affordable housing providers, will not be exempt from this charge.
Annual service charge: commercial property	While the SB will not be endowed with the commercial property and act as landlord (a scenario which has occurred in other areas) – the value of the commercial property has been capitalised in the viability assessment – it will be possible to include a service charge for maintaining the public areas (in a similar vein to the residential service charge). This would be charged at a fixed rate for each business class per m^2, and rise in line with RPI or CPI.	Revenue streams such as service charges need to be written into leases and/or sale of freehold from the outset.
Community / leisure facilities	The leisure facilities on the development are anticipated to be endowed to the SB – including the	An element of the commuted sums will help pump prime this aspect of long term management, but

	sports pitches, village green / cricket pitch, the associated pavilions and changing facilities etc. The number of allotments has not yet been fixed however the land allocated for allotments is also assumed to be endowed into the SB, from which the SB will derive a small rental income on an annual basis. The community facility/space is currently planned to be incorporated into the school and at this stage is therefore assumed to be managed by the incoming academy trust.	further revenue will be derived from their ongoing use and hire. These elements are by no means 'high income', but need to be set at a level which enables sustainable management and upkeep of the facilities. The sports pitches may be affected in the longer term by the minerals extraction which will also be a consideration within the financial model. For the modelling of revenue streams we have assumed 50 allotments will be in place, a figure which will need refinement over time.
Investment income	The allocation of commuted sums and other payments into the SB should result in the ability to derive a level of investment income (in the form of interest payments).	It is too early to account accurately for this in the figures as the running costs of the SB need to be determined in due course – the costs will reduce any 'cash surplus' and therefore any investment income.

Other Funding Streams / Considerations

The timing of all these revenue streams remains an important consideration in viability of the SB, and these have begun to be modelled as part of the IDMP. They will need continuous refinement as part of an active business plan, which will also need to include a more detailed understanding of the costs and investment required to maintain the community facilities as the design process continues. Operational costs should be minimised by ensuring energy efficient building design and in the same way, landscape designs should be considered to minimise ongoing cost while maximising ecological benefit and amenity value. Flexibility in design could allow buildings to adapt to different needs, providing a range of income generating opportunities over time.

Other revenue streams or funding sources which have not yet been included within the model could also be considered as negotiations progress:

- Loans and equity finance – especially where more innovative income streams are sought, perhaps through energy infrastructure
- Additional public sector contributions – for pump priming the SB
- Transport infrastructure: operation of a car club (membership income), community bus service (tickets) and public EV charging points (sales of power)
- Energy infrastructure: whilst the SB is unlikely to retain the necessary skill sets within the body, collaboration with specialist operators of energy infrastructure, such as the energy generation and storage systems, could result in additional, revenue streams over the longer term. These could be potentially substantial as a proportion of the overall sources of income and enable cross-subsidy of other less profitable – but socially valuable – undertakings. (See Energy Services Provision section above).

The graphs below have been produced using data currently available and a number of assumptions, to visualise what the funding for the stewardship body might look like over time.

SB Revenue

Using the current predictions in relation to the build out of the site, alongside modelled estimates of the income streams which could accrue to the SB (based on the table above), an illustrative revenue profile is provided below. This currently excludes any revenue streams which would relate to the operation of energy or transport infrastructure and technologies, and which would therefore be additional.

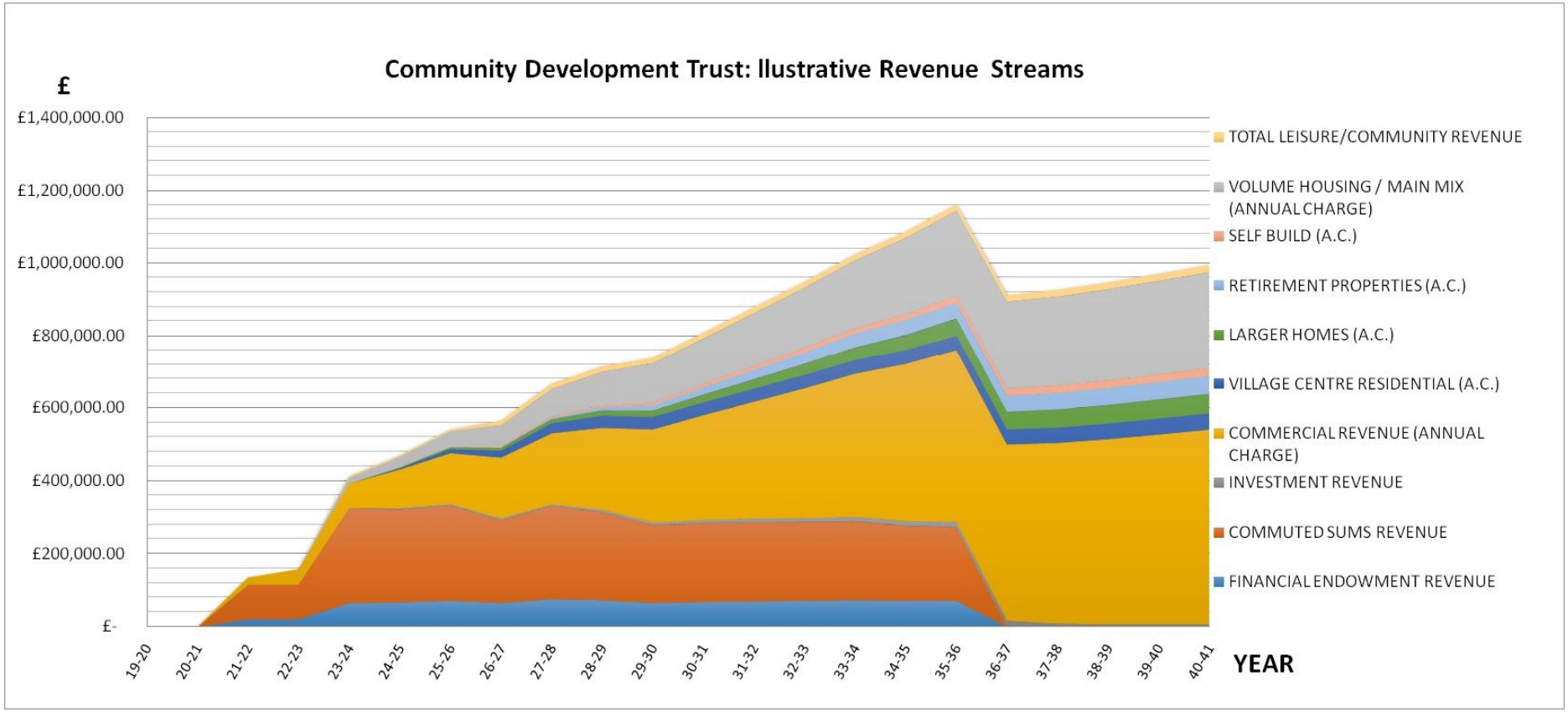


Figure 4: Illustrative SB Revenue Streams

SB Operational Cost Profile

Again using the current predictions in relation to the build out of the site, alongside modelled estimates of the operational costs which could need to be incurred by the SB to fulfil its obligations (based on the table above), an illustrative cost profile is provided below.

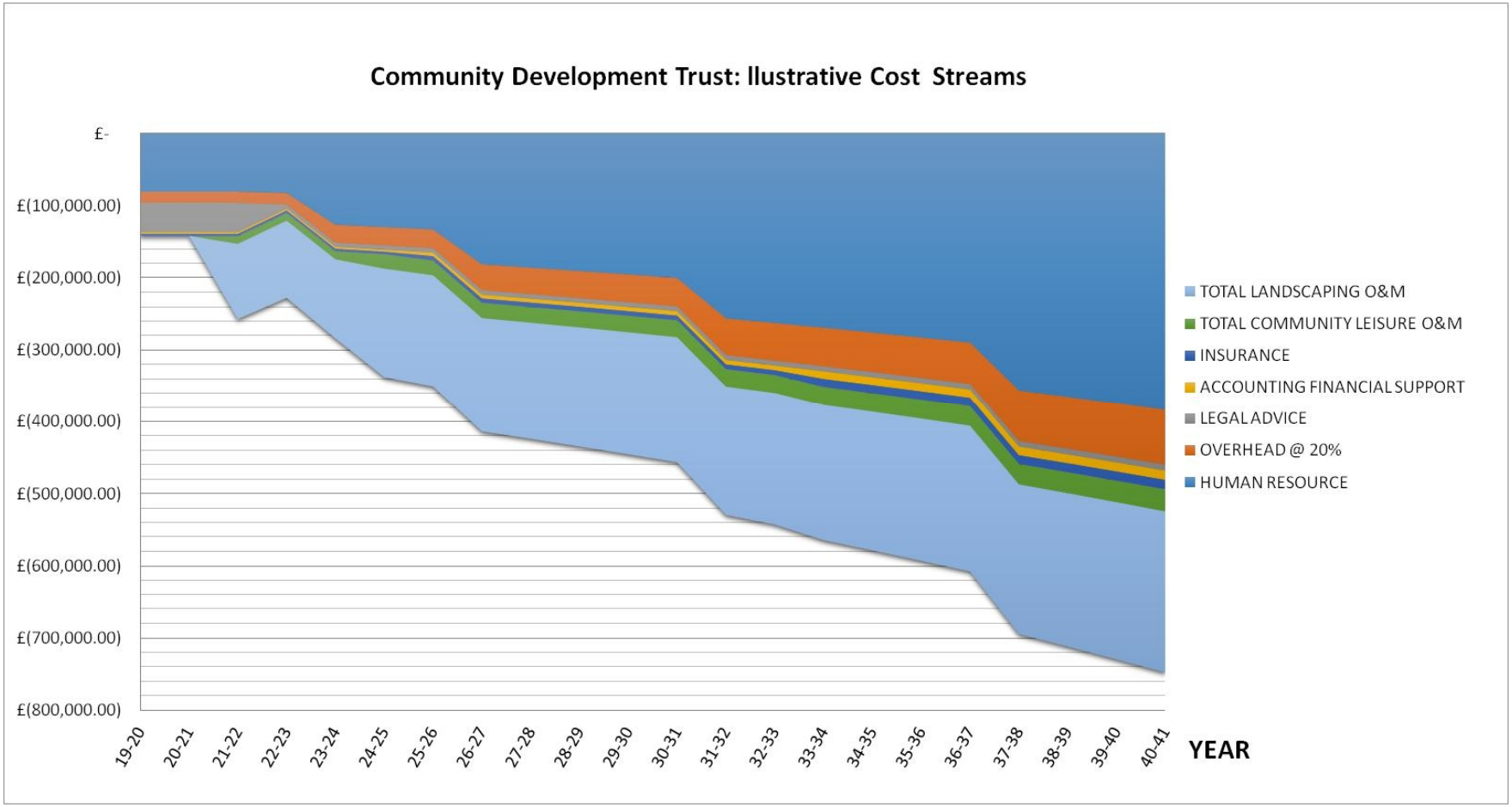


Figure 5: Illustrative SB Operational Cost Profile

SB Simple Cashflow

Combining the revenue and cost profiles helps to provide a simple cashflow. As can be seen, the first 2 years – which will involve costs associated with set up and early operation, prior to any sustainable revenue streams, means the SB would be operating at a loss and will therefore need to receive some form of 'pump prime' funding, which could – in principle - be 'repaid' by the SB over time if necessary.

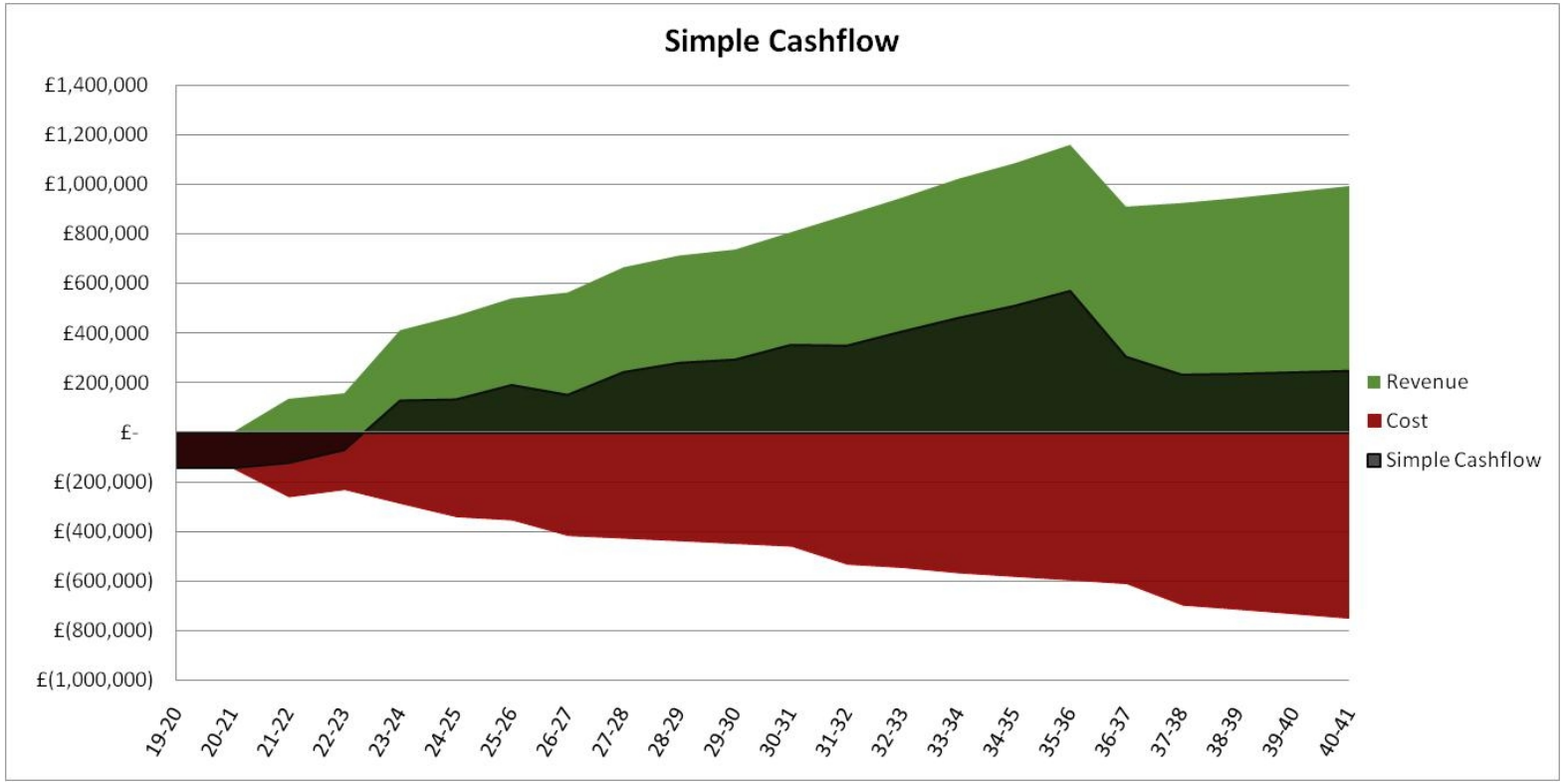


Figure 6: Illustrative SB 'Simple' Cashflow

Timing

The full delivery plan for the development is provided in the final section of this document. The Section 106 discussions for the Officer's Mess site are programmed in as early as the first quarter of 2019, while the main site will be looking to complete the LSDP contracting by December 2019.

This clearly demonstrates the need to ensure the existing momentum for the development of the SB is continued to ensure it can be fully incorporated into any legal / contractual arrangements as the project develops.

Lessons from other developments show that the SB needs to be an integral part of the development process from the outset, and the work undertaken for this IDMP needs to be continued throughout the process, including as part of the procurement of the LSDP and the subsequent parcelling of development and detailed planning applications.

The amount of time needed to agree all the different aspects of the long term management of the site, and set up the necessary legal structures and agreements, should not be underestimated.

Agreeing appropriate governance

It is anticipated that a consortium of parties will be necessary to develop the SB into a fully functioning, sustainable entity. The nature and involvement of those parties will necessarily evolve over time. During the set up phase, the consortium will involve:

- the MOD
- Rutland County Council
- LSDP

They will need to take a view on the liability, ownership and control of assets as this will impact upon the evolution of the governance structure.

Relatively quickly, and certainly once construction commences, the consortium will need to facilitate involvement of the community – including residents, third sector and non-domestic owner/operators. In that way not only will the community be properly represented, the SB will begin to act directly on the (emerging) community's behalf, and through an extended transition period develop the necessary skill sets needed to take necessary strategic decisions, manage the assets and ultimately ensure self sustainability.

Long Term Management: Key Recommendations (1)

- The resources required for the effective development and implementation of the SB should not be underestimated: consideration should therefore be given at the earliest opportunity to dedicated human resource to lead and champion the concept. This is important in gaining the (vital) support of all strategic partners and the community from the outset.

- The SB is a Local Plan requirement so its future existence should now be accepted – however there remains considerable flexibility in the structure, governance and final legal form that it could take. In appointing the LSDP, any tender documentation will need to reference the SB (and its overall aims) as a requirement, and require potential partners to outline their own preferred approach to successful implementation. This must include the ability to enable the wider – sustainable - aspirations of the Masterplan process to be fully realised.

- Once appointed, a period of refining decisions regarding preferred governance and asset ownership strategy, influenced through an updated assessment of the role, funding and finance of the SB, needs to be built into the plan. This period will need to run in parallel with the wider planning and Section 106 negotiation process, and enshrined legally in the final S106 Agreement.

- The current cashflow model, described above, includes an allowance for initial legal costs in developing the structure. Early legal advice, acting on behalf of RCC and the future community, should therefore be sought to inform this process.

- The current cashflow model focuses on the 'knowns' – those assets in the Masterplan that will require management. Other roles for the SB will need further consideration over time, including, for example, the level of community support and associated services that it may wish to deliver. Any structure will need to be sufficiently flexible, to enable such services to be developed at the point they are needed and can be funded.

- More complex service delivery, such as energy services, are probably best served by specialist partners rather than the SB itself. This does not mean, however, that the SB should not financially and socially benefit from such delivery, rather it should actively seek a collaborative partnership to jointly implement this, with the support of the strategic partners / members.

Long Term Management: Key Recommendations (2)

- A structure which
    - is sufficiently flexible to enable gradual transfer of responsibility and power to the new community ('membership') and enables an efficiency exit strategy for the LSDP is considered very important.
    - is able to implement an Asset Lock is strongly recommended to prevent the distribution of residual assets to members. It should be in place to guarantee that the public / community benefit of any retained surplus or residual value cannot be appropriated for private benefit of members, but is reinvested for the benefit of the new community
    - can facilitate member investment for certain, perhaps more innovative activities, through non-transferable, withdrawable share capital ('community shares'), should also be considered, alongside the more typical non-withdrawable 'membership shares'.

- This – relatively early – stage of the process should enable lessons from other authorities to be rapidly learned. It is strongly recommended that the partners engage with other authorities and SBs who have implemented similar arrangements to understand the barriers and issues of the SB process and how they can be overcome with minimum effort whilst avoiding unnecessary delay and cost.

- On a site specific basis, early resolution of the following aspects will be important:

    - Clarity in relation to the management of and facilitating access to the non-developable area – potentially helping to minimise holding costs
    - Amount of funding needed to pump-prime the SB, and where that resource is going to be found
    - The level of involvement of the existing community, where this is appropriate to do so – and the extent to which existing parish councils will be part of this process

6.5 Case Study Comparison: Chilmington Green, Kent

Introduction

Prior to finalising the stewardship body for St George's, the lessons learned by other communities need to be understood. One comparable example, beyond the experience of existing Garden Cities such as Letchworth includes Chilmington Green in Ashford. Ashford Borough Council is establishing a community management organisation (CMO) for its new urban extension in Chilmington Green, which will see up to 5,750 new homes, 1,000 jobs and associated infrastructure being created over the next 25 years.

The CMO

The Chilmington Green Area Action Plan, adopted in 2013, sets out an ambition for a strong, engaged and sustainable community, supported through the CMO. This will be in the form of a private, not-for-profit company with company Objects that define it as a Trust. The company's Objects and its Area of Benefit are to be limited to undertaking its activities for the benefit of the development area and its residents. The intention is for the CMO then to seek charitable registration, giving it the full status of a registered charity. Registration serves to provide further safeguards. The trustees of the CMO will include, as equal partners:

- The developer team
- Representatives from relevant organisations
- Resident representatives, increasing over time as the development grows.

The governance arrangement is such that there is no one party with an overall control of voting rights.

The CMO will be endowed with all the community assets of the development (except schools and roads), including open space and landscaping, for which it may develop an in-house maintenance operation or commission a local company to manage on its behalf. The assets will also include play spaces, allotments, and a community hub building and sports centre.

The CMO will also be endowed with up to 50,000 square feet of commercial property, which will enable it to support local people wanting to set up their own business as well as providing additional income. Residents will be required to pay a service charge (variable depending on property size) which will contribute to meeting the costs of the management and maintenance of the community assets in the long term.

The Planning Process & Section 106

After much discussion and negotiation (including agreeing Heads of Terms for Section 106), planning approval was granted for the site in 2014, subject to the completion of a Section 106 agreement. Producing this Section 106 agreement was a complex process which took around two years to complete.

However, having a CMO team in place throughout this process meant that the Council was able to consider ongoing maintenance liabilities and how they could be funded right from the outset.

To support a new CMO, the developers agreed a significant cash endowment to provide subsidy during the first half of the development period, plus the provision of built commercial floor-space for endowment to the CMO. Other early work included highly detailed schedules within the Section 106 agreement specifying how and when the Command community assets would be established, providing a clear approach for delivery.

Consultation approaches and timeframes, design briefs and specifications for the facilities were set out, as well as the usual delivery triggers. Because the Council worked alongside the developers to set up the CMO, it was able to ensure that preparations for 'going live' were well resourced and timely.

An important lesson from Chilmington Green is that considerable commitment has been required from the developer consortium and Ashford Borough Council to support this innovative approach. The Council has committed funding to set up the CMO prior to any endowments and has established a small delivery team in the belief that having this resource in place early will help to ensure that the development is of high quality with the community at its heart. A community development strategy has also been drafted, setting out what needs to be done, particularly in the first three years.

7. INFRASTRUCTURE: COSTS &DELIVERY PROGRAMME

7.1 Summary of Required Infrastructure

Itemised Cost Profile

The following table provides a summarised breakdown of the different infrastructure elements and estimated associated costs for the proposals. Within this table are included elements not detailed or explained previously in this IDMP, including landscaping and on-site primary road infrastructure. The former has been costed as part of the viability appraisal process, and is assumed to be expended in line with the development build out, the responsibility of the LSDP. Costs for the latter, again the responsibility of the LSDP, have been sought as part of the viability and masterplanning process and will be incurred in line with the phasing (and associated parcelling) of the development. They are both included here for completeness, and further detail on these can be found in the relevant documentation (the Fabrik Masterplan and BBP Viability Assessment).

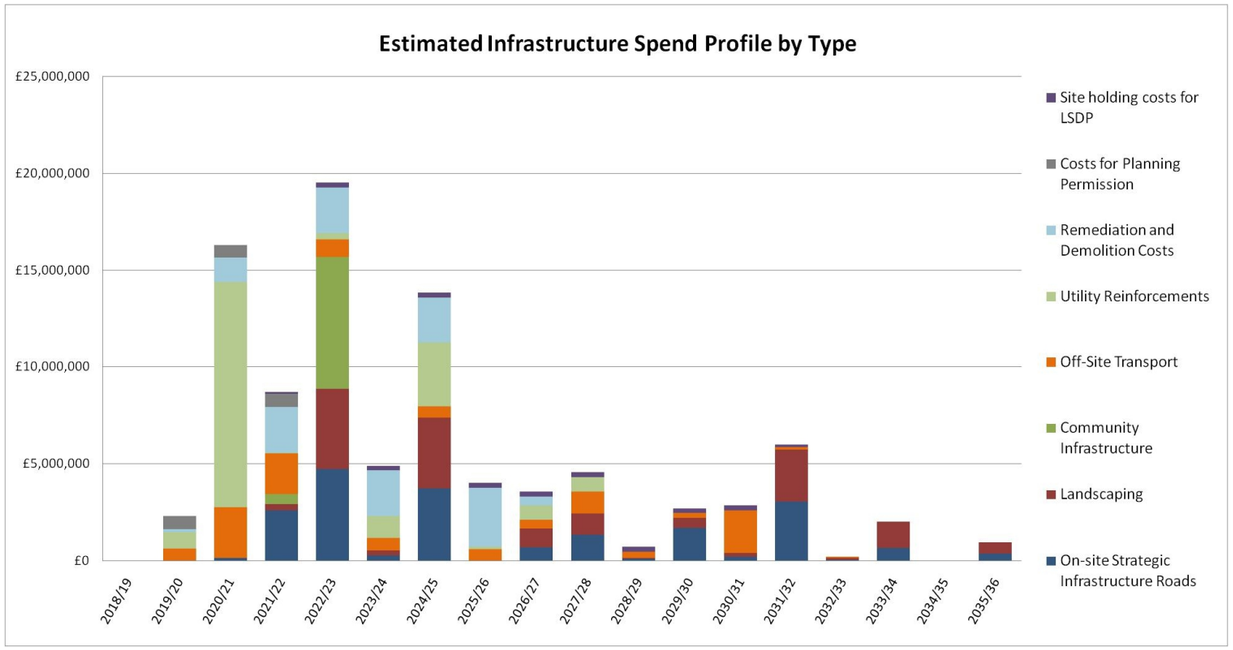
Estimated Strategic Infrastructure Expenditure

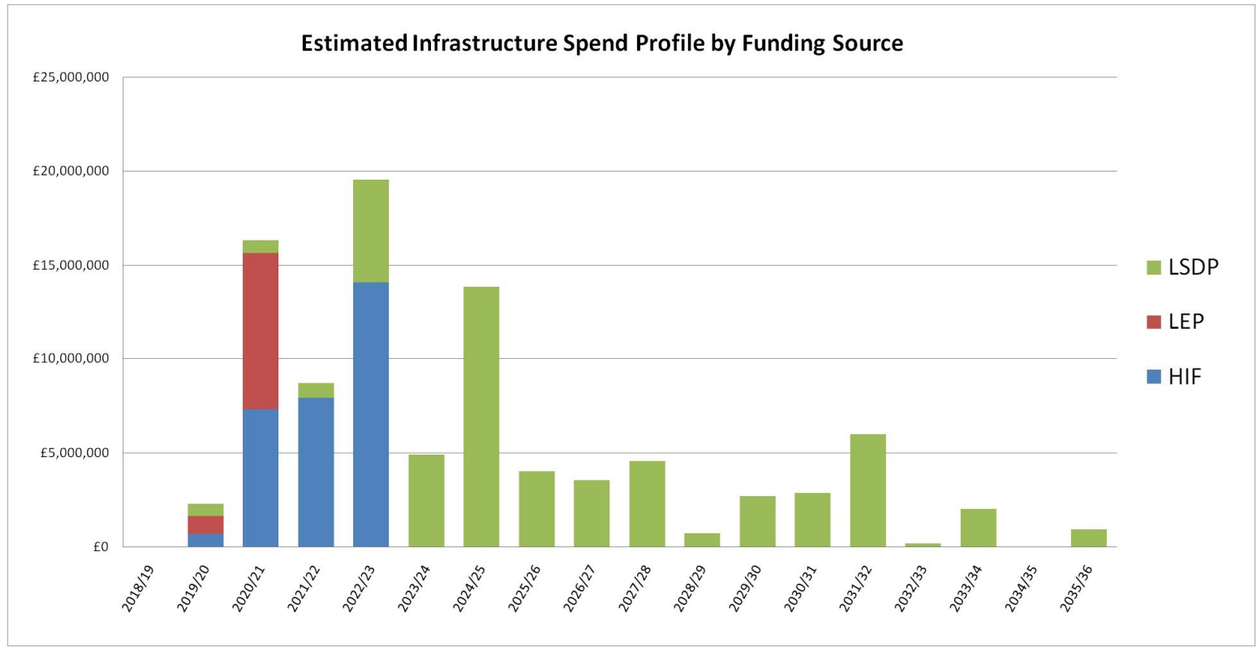
ITEM	HIF	LEP/RCC	LSDP	TOTAL
Fees associated with obtaining planning permission		**TBC**		**£2,000,000**
Site Holding Costs	**£0**	**£0**	**£2,500,000**	**£2,500,000**
On-site Strategic Infrastructure Roads	**£2,798,900**	**£0**	**£17,051,740**	**£19,850,640**
Design Fees	£526,340	£0	£789,627	£1,315,967
Enabling Works	£65,000	£0	£500,000	£565,000
On Site Primary Infrastructure Roads inc park and ride	£2,168,560	£0	£14,512,672	£16,681,232
Builders Work associated with utilities	£39,000	£0	£261,000	£300,000
Local Authority Adoption Fees - Roads & Sewers	£0	£0	£988,441	£988,441
Landscaping	**£4,064,623**	**£0**	**£11,852,726**	**£15,917,349**
Design Fees	£310,598	£0	£697,775	£1,008,373
SUDS	£425,369	£0	£1,701,474	£2,126,843
Landscaping - NW corner (village green)	£2,710,646	£0	£0	£2,710,646
Buffer Planting	£618,010	£0	£412,006	£1,030,016
Open Spaces	£0	£0	£1,232,130	£1,232,130
NEAPS / LEAPS / LAPS	£0	£0	£2,420,550	£2,420,550
Strategic Gap	£0	£0	£1,568,167	£1,568,167
Sports Pitches	£0	£0	£1,276,281	£1,276,281
Heritage / Ecology Zone	£0	£0	£867,863	£867,863
Country Park (walking / cycling route)	£0	£0	£212,472	£212,472
Commuted sum	£0	£0	£1,464,008	£1,464,008
Community Infrastructure	**£7,327,604**	**£0**	**£0**	**£7,327,604**
Primary School - design & planning	£511,228	£0	£0	£511,228
Primary School - construction	£6,816,376	£0	£0	£6,816,376
Health & Community Centre (not included - funded separately)				

ITEM	HIF	LEP/RCC	LSDP	TOTAL
Off-Site Transport	**£3,979,250.00**	**£1,800,000.00**	**£6,849,500.00**	**£12,628,750**
Off Site Highways Design / S278	£828,750	£0	£0	£828,750
Land Acquisition / CPO for northern access points	£375,000	£375,000	£0	£750,000
Two new Northern Access Points	£1,125,000	£1,125,000	£0	£2,250,000
Wytchley Warren Lane widening	£300,000	£300,000	£0	£600,000
EW / Manton/Normanton Rd / Pennine Drive Lane Junctions	£500	£0	£499,500	£500,000
Pedestrian / Cycle improvement linkages	£850,000	£0	£0	£850,000
Sustainable travel - pump prime bus services for first 10 years	£500,000	£0	£3,500,000	£4,000,000
New Access onto Edith Weston Rd	£0	£0	£100,000	£100,000
Station Road / A47 - upgrade to a roundabout	£0	£0	£500,000	£500,000
Lyndon Rd / A6003 - consolidation and upgrade to roundabout	£0	£0	£1,500,000	£1,500,000
A606 / Normanton Park Road junction - upgrade to a roundabout	£0	£0	£750,000	£750,000
Utility Reinforcements	**£6,525,532**	**£6,245,532**	**£6,114,134**	**£18,885,198**
Professional Fees	£453,786	£423,786	£440,000	£1,317,572
Electrical Infrastructure	£5,821,746	£5,821,746	£0	£11,643,492
Gas Infrastructure	£0	£0	£3,301,804	£3,301,804
Foul Infrastructure	£0	£0	£1,500,000	£1,500,000
Water Supply	£0	£0	£872,330	£872,330
Data & Telecoms	£250,000	£0	£0	£250,000
Remediation and Demolition Costs	**£4,850,000**	**£1,250,000**	**£8,197,500**	**£14,297,500**
Professional Fees	£450,000	£150,000	£397,500	£997,500
Area 1- Demolition (outside fence)	£0	£500,000	£0	£500,000
Area 1 - Remediation (outside fence)	£0	£600,000	£0	£600,000
Area 1- Demolition (inside fence)	£2,000,000	£0	£3,000,000	£5,000,000
Area 1 - Remediation (inside fence)	£2,400,000	£0	£3,600,000	£6,000,000
Area 2 - Demolition	£0	£0	£300,000	£300,000
Area 2 - Remendiation	£0	£0	£900,000	£900,000

Infrastructure Expenditure Profiles

The following profiles are based on the currently modelled build out rates, data and trigger points and reflect the cashflow within the Viability Assessment. They will need continuous refinement. However, a key point to note is the early expenditure related to electrical infrastructure within 'Utility Reinforcements'. A combination of funding sources are currently anticipated – including the LSDP, Housing Infrastructure Fund, and funding from the LEP which, if secured, would enable the commercial development to proceed.



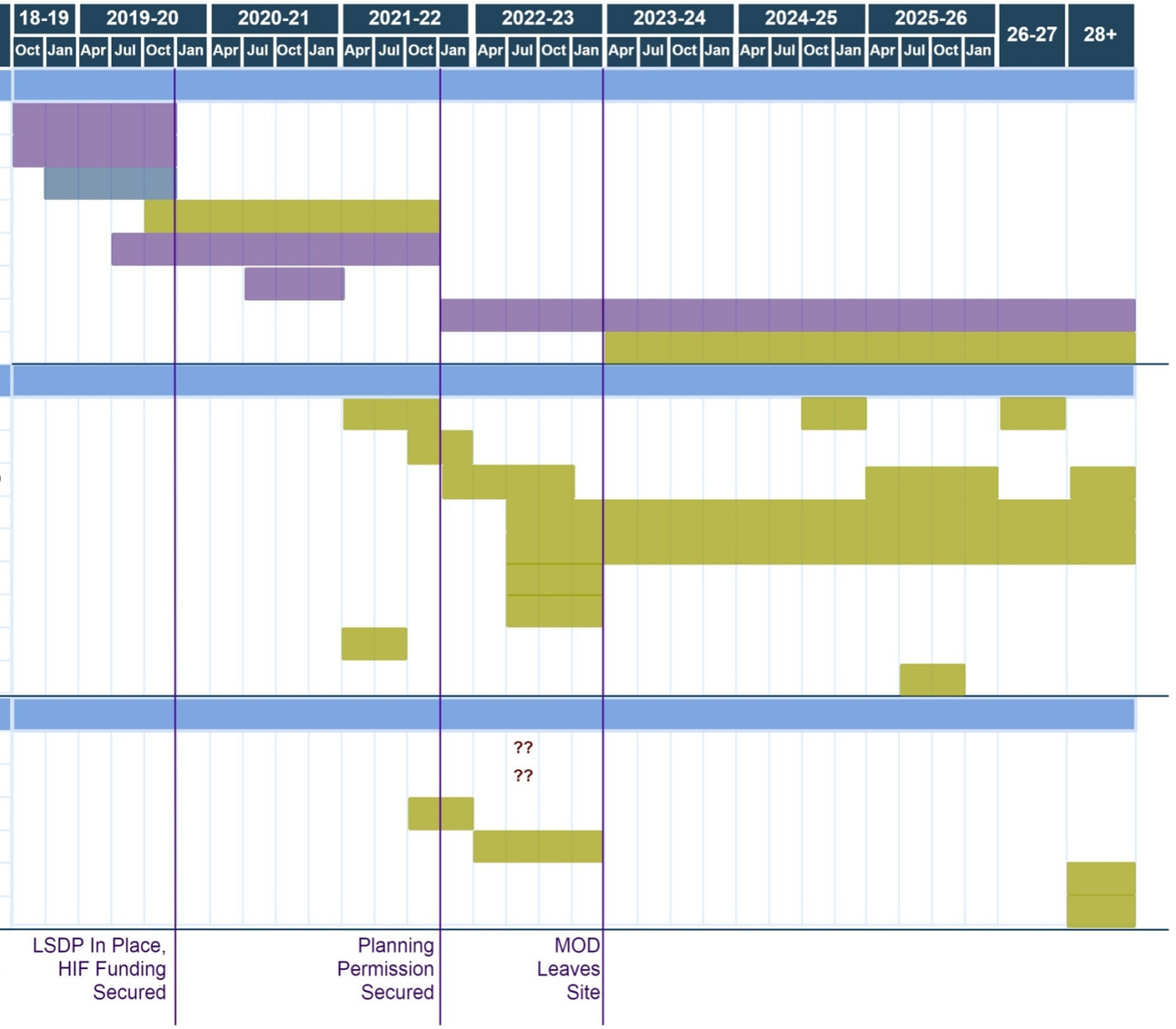


Programmes and Timescales

The Gantt charts (over the page) provide an overview of when key infrastructure implementation needs to occur, and the party responsible for its delivery. It should be clear from these charts that it is an ambitious development programme and that it will require all parties to work collaboratively and highly effectively in order for it to be met.

7.2 Administrative Milestones / On Site Strategic Infrastructure / Community Infrastructure

	ACTIVITY	LEAD	Start	End
1	**Administrative/Legal Milestones**			
	Local Plan: To Adoption	RCC	Oct 2018	Dec 2019
	HIF Bid Application & Determination	RCC	Oct 2018	Dec 2019
	LSDP Contracted	MOD	Jan 2019	Dec 2019
	Main Planning Application / Determination / S106	LSDP	Oct 2019	Dec 2021
	Land Acquisition / Compulsory Purchase	RCC	Jul 2019	Dec 2021
	Commercial Planning Application / Determination / S106	RCC	Jul 2019	Dec 2021
	Commercial development - completions	RCC	Mar 2022	2036
	Residential development - completions	LSDP	Jul 2019	2036
2	**Onsite Strategic Infrastructure Delivery**			
	Design Periods	LSDP	Various	Various
	Enabling Works - Ph1 Onsite Highways	LSDP	Oct 2021	Jan 2022
	On-Site Primary Highways inc. P&CR - Construction	LSDP	Jan 2022 (Ph1)	Dec 2022 (Ph1)
	Blue Infrastructure (Drainage and SUDS)	LSDP	Jul 2022	to end
	Landscaping	LSDP	Apr 2020	to end
	Southern Buffer Planting	LSDP	Jul 2022	Mar 2023
	Village Green & Pavillion	LSDP	Jul 2022	Mar 2023
	Builders Work Assoc with Utilities (Commercial / Power)	LSDP	Jul 2022	Mar 2023
	Provision of Adoption Fees (Roads and Sewers)	LSDP	c.2025	c.2025
3	**Infrastructure Delivery - Community**			
	Health Care - Design and Planning	LSDP	**TBC**	**TBC**
	Health Care - Construction	LSDP	**TBC**	**TBC**
	School - Design and Planning	LSDP	Oct 2021	Mar 2022
	School - Construction	LSDP	Apr 2022	Mar 2023
	Sports Pitches / Pavillion	LSDP	c.2030	c.2030
	Allotments	LSDP	c.2030	c.2030

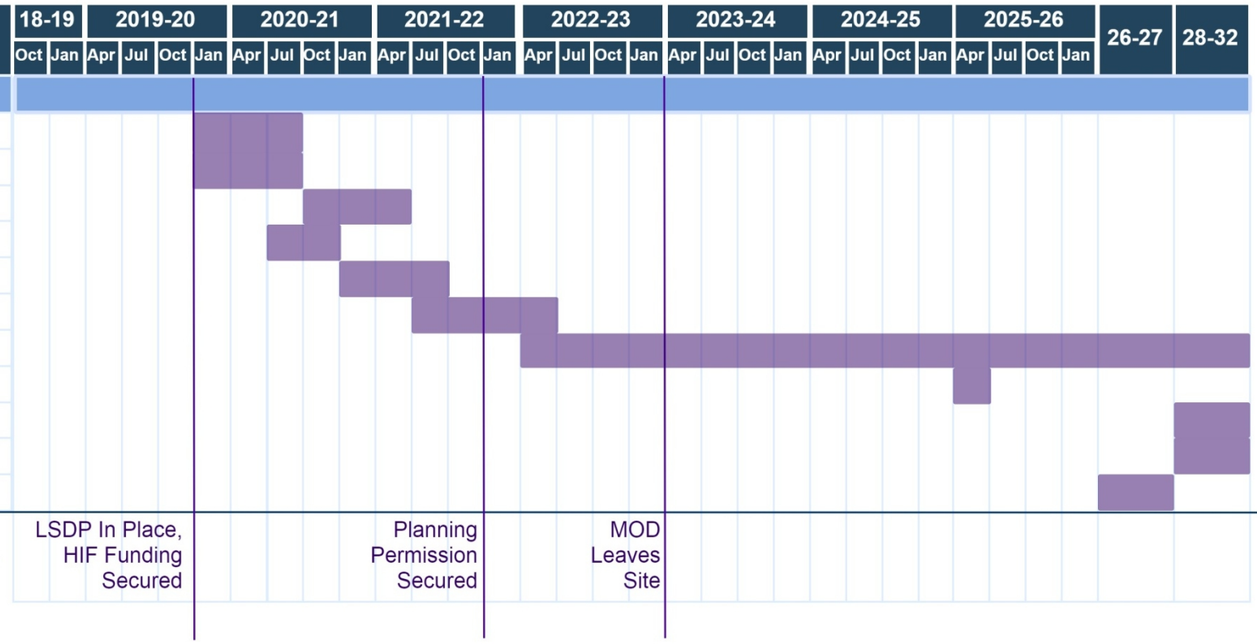


Notes:

- It has been assumed that the highways adoption fees would be payable in 2025-26, which deviates from the previous assumptions made in the infrastructure planning workshop of the 11/10/2018.
- There is currently no defined programme for the health centre, however the Viability Appraisal assumes expenditure will be incurred at the time of the Village Centre development, c. 2024-25.

7.3 Offsite Transport

	ACTIVITY	LEAD	Start	End
4	**Offsite Transport**			
	Off Site Highway Design / S278	RCC	Jan 2020	Sep 2020
	Land acquisition / CPO for northern access points	RCC	Jan 2020	Sep 2020
	Two new Northern Access Points	RCC	Oct 2020	Jun 2022
	Wytchley Warren Lane widening	RCC	Apr 2020	Mar 2022
	EW / Manton Rd / Normanton Rd / Pennine Drive upgrades	RCC	Jan 2021	Sep 2021
	Pedestrian / Cycle improvement linkages	RCC	Jul 2021	Jun 2022
	Sustainable travel - pump prime bus services for 10 years	RCC	Apr 2022	Mar 2032
	New access onto Edith Weston Rd	RCC	Apr 2025	Jul 2025
	Station Road / A47 - upgrade to a roundabout	RCC	Apr 2030	Sep 2030
	Lyndon Rd / A6003 - consolidation / upgrade to roundabout	RCC	Apr 2030	Dec 2030
	A606 / Normanton Park Road jn - upgrade to roundabout	RCC	Apr 2026	Mar 2027

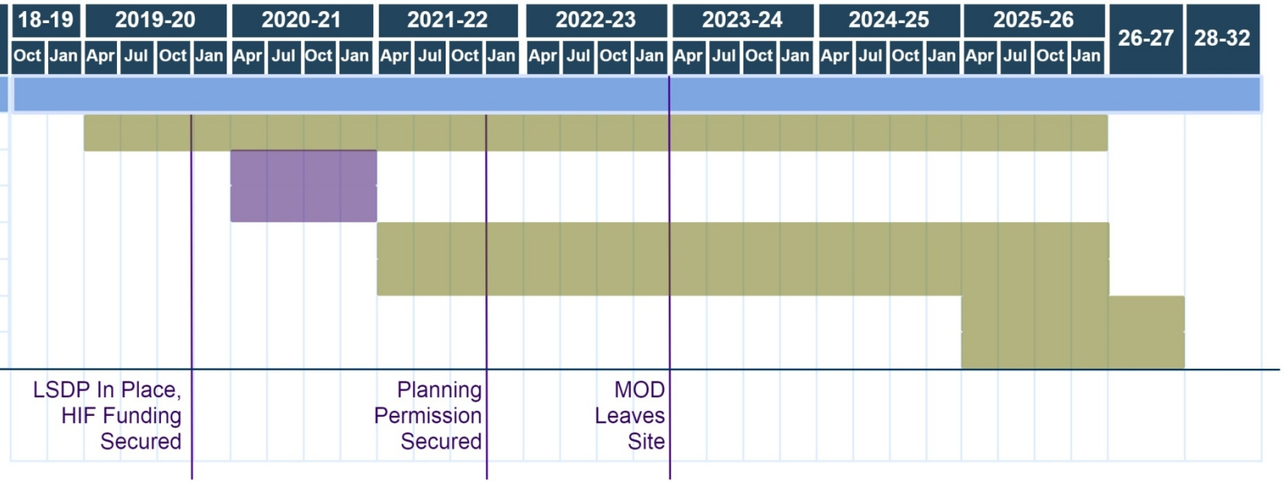


Notes:

- It has been assumed that all offsite highways works will be overseen / led by RCC rather than the LSDP, much of this work being funded under HIF up to 2023.

7.4 Remediation and Demolition

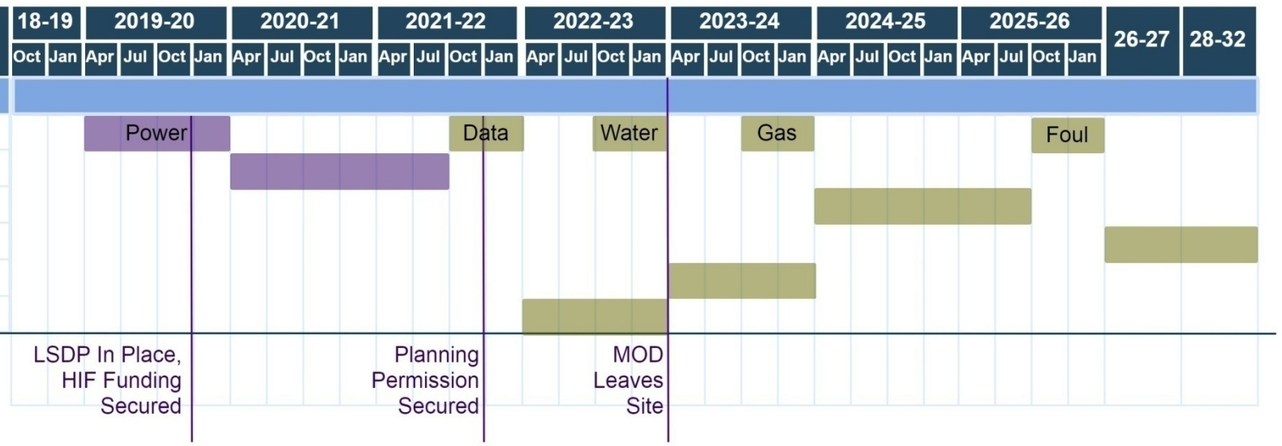
	ACTIVITY	LEAD	Start	End
5	**Demolition and Remediation**			
	Professional Fees / Design	LSDP	Various	Various
	Area 1 - Demolition OUTSIDE FENCE	RCC	Apr 2020	Sep 2021
	Area 1 - Remediation OUTSIDE FENCE	RCC	Apr 2024	Sep 2025
	Area 1 - Demolition INSIDE FENCE	LSDP	Apr 2026	Mar 2028
	Area 1 - Remediation INSIDE FENCE	LSDP	Apr 2023	Mar 2024
	Area 2 - Demolition	LSDP	Apr 2022	Mar 2023
	Area 2 - Remediation	LSDP	Apr 2022	Mar 2023



Note:
- It has been assumed here that RCC will take the lead in demolition necessary for the commercial area to progress.

7.5 Utilities

	ACTIVITY	LEAD	Start	End
6	**Utilities**			
	Professional Fees / Design	LSDP RCC	Various	Various
	Electrical Infrastructure (WPD)	RCC	Apr 2020	Sep 2021
	Gas Infrastructure (Cadent)	LSDP	Apr 2024	Sep 2025
	Foul Drainage Infrastructure (STS)	LSDP	Apr 2026	Mar 2028
	Potable Water Supply Works (Severn Trent)	LSDP	Apr 2023	Mar 2024
	Data and Telecommunications (Openreach)	LSDP	Apr 2022	Mar 2023



Note:

- It has been assumed that the upgrades to electrical infrastructure will need to be brought forward to enable the commercial development to progress, as this is anticipated to trigger the current threshold capacity. However, it will heavily depend on the type and quantum built. If the electrical upgrades are required to facilitate this, then the design period will need to commence in early 2019 in order for the new infrastructure to be in place in time (allowing for design, planning, legal agreements, construction, commissioning etc)

RegenCo Transforming Britain • one town at a time

East Hampshire DISTRICT COUNCIL

IN PARTNERSHIP WITH

BBP Regeneration Appraisal • Strategy • Delivery

fabrik

DAEDALUS ENVIRONMENTAL

CampbellReith consulting engineers

Derek Finnie Associates CONSULTANT ECOLOGISTS