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ARCADIS Design & Consultancy for natural and built assets

LANGARTH GARDEN VILLAGE

Strategic Utilities - Soft Market Testing

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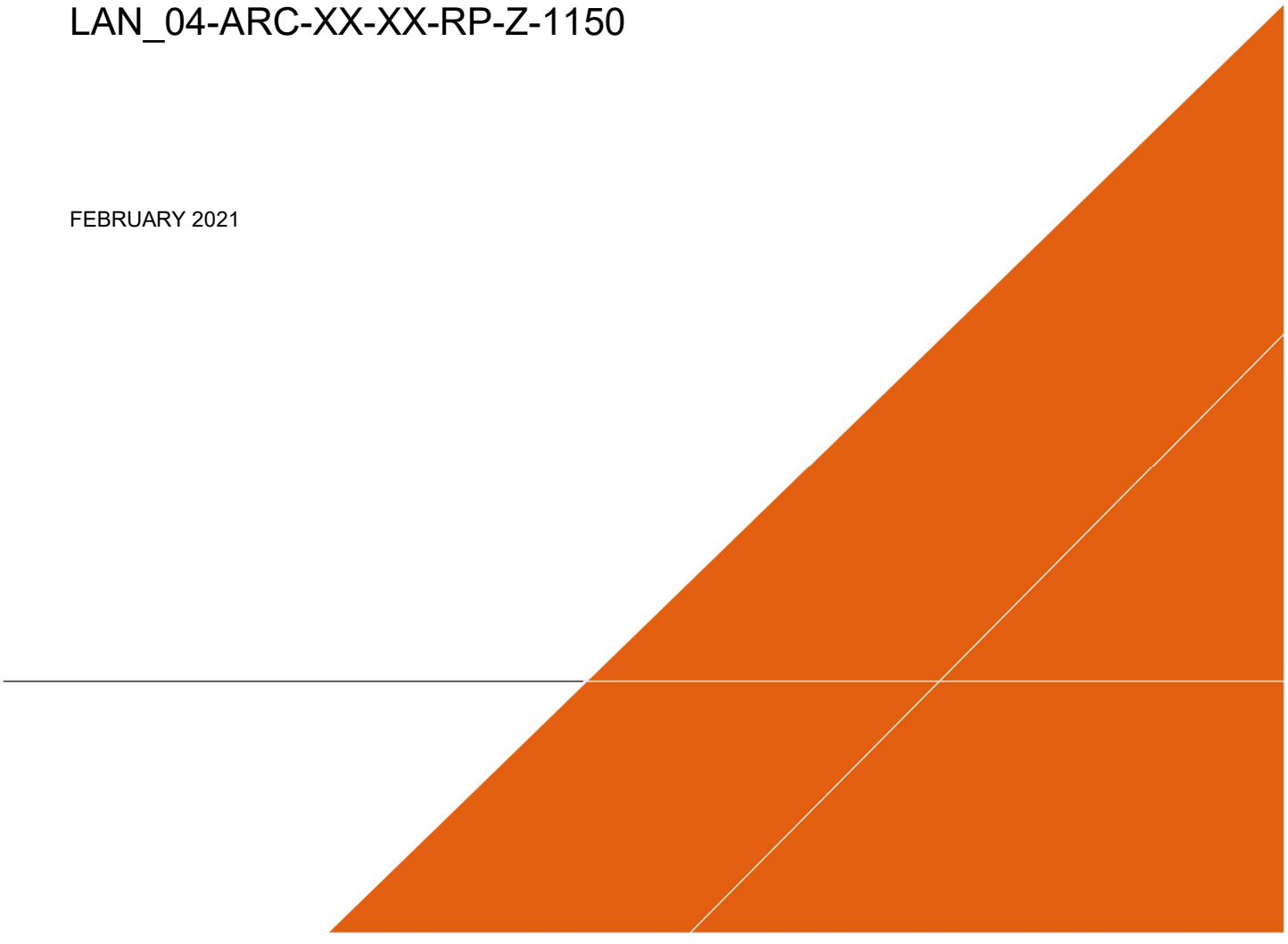

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VERSION CONTROL

Version	Date	Author	Checker	Approver	Changes
P01	12/02/21	R Donati / J Tanner	A Hart	P Valvona	First issue
P02	17/02/21	R Donati / J Tanner	A Hart	P Valvona	Final issue

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CONTENTS

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- **APPENDIX A- LANGARTH GARDEN VILLAGE UTILTIES AND DRAINAGE STRATEGY**
- **APPENDIX B - NAR UTILITIES DRAWINGS – PROPOSED ROUTES**

1 Introduction

1.1 Purpose of This Document

This document forms a technical appendix to the Cornwall Council Soft Market Test for Langarth Garden Village Strategic Utilities. This document should be read in conjunction with the main Soft Market Test (SMT) document.

The scope of this document is to provide information on technical requirements and scope to enable respondents to answer the questions outlined in the SMT document. Arcadis is leading the delivery of technical infrastructure programme for Langarth Garden Village (LGV) and is supporting Cornwall Council (CC) in gaining an understanding of the potential level of interest across the regulated industry and private sector for the provision of strategic utilities services for:

- Potable water (Section 2)
- Gas (Section 3)
- Telecoms (Section 4)

Within the LGV site, the strategic utilities are proposed to be located within the corridor of a new access, known as the Northern Access Road (NAR) to eventually supply the LGV development sites.

The aims of the SMT are to:

- Provide advanced notice to the market of a possible contract opportunity
- Identify risks at the earliest possible opportunity
- Avoid potential issues later on in the procurement process
- Promote innovation
- Encourage a positive relationship with the market
- Identify the potential level of competition allowing better resource planning

This assessment will enable CC to develop a business proposal. Any such proposal would be subject to the development and approval of a business case, and, as such, implies no commercial commitment.

Note: A SMT is not a formal tender document. Participating on a SMA will not prejudice suppliers participating in any future procurement.

1.2 Background

Langarth Garden Village (LGV) is a development that will provide some 3,800 new homes as well as commercial and business developments, a primary school, the Stadium for Cornwall and supporting community buildings and infrastructure. Details of the proposed development can be found on the Council's website https://www.langarth.co.uk/

The site is located approximately 3km to the west of Truro – see Figure 1 below - and extends approximately 3.6km to the west. The site is bordered to the south by the dual carriageway A390 (included within the red line boundary). To the east the site adjoins The Royal Cornwall Hospital (RCHT).

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Langarth Garden Village - Utilities Soft Market Testing

Figure 1 – Langarth Garden Village - Site Location & Boundary

A hybrid planning application was submitted in December 2020 for the LGV (detailed application for the Northern Access Road (NAR) and an outline application for the LGV masterplan site). Full details of the hybrid planning application can be found at the Cornwall Council website1 and the reference is PA20/09631.

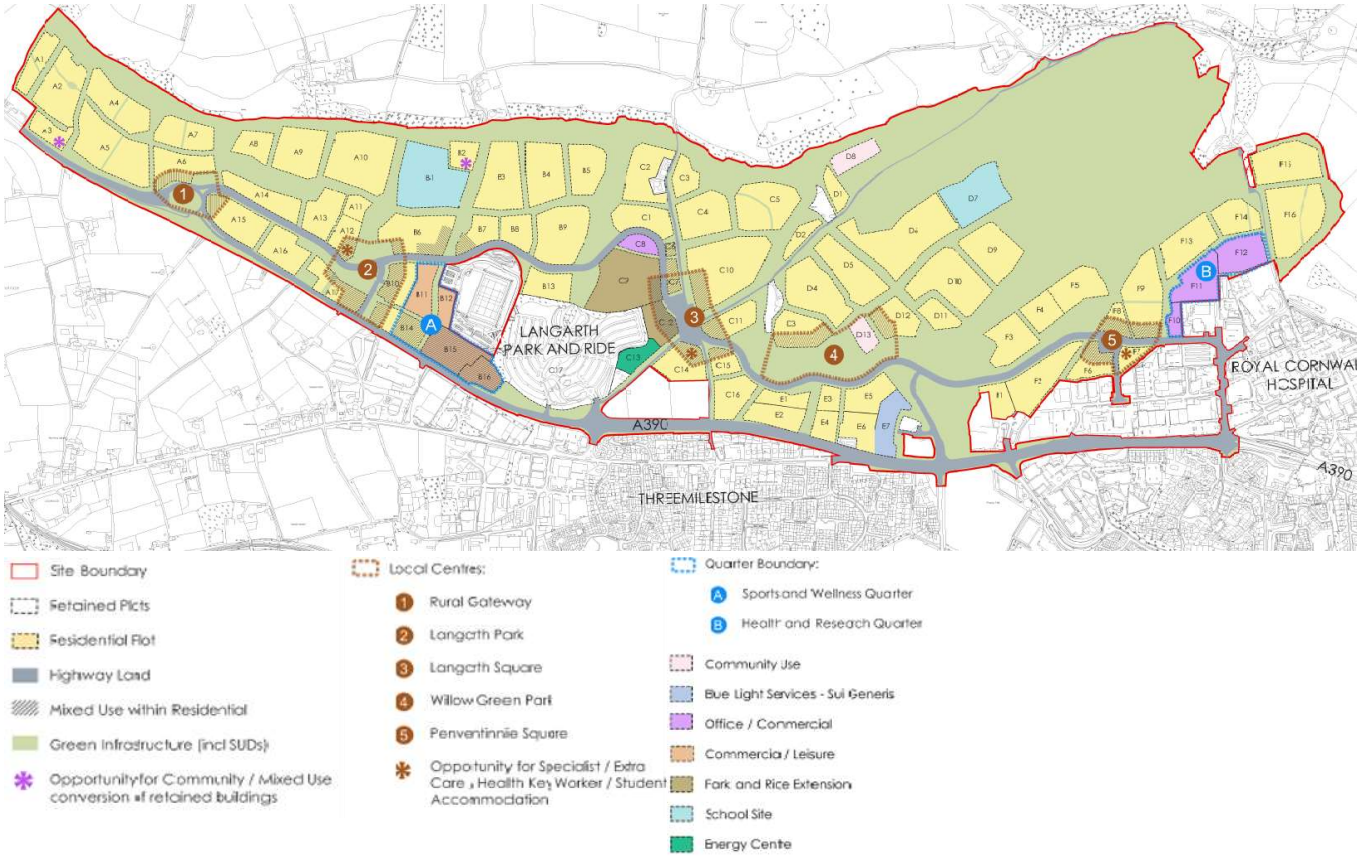


Figure 2 – Masterplan and land use

[1] https://www.cornwall.gov.uk/environment-and-planning/planning/online-planning-register/

1.3 Site Phasing

A site wide development masterplan has been undertaken for the LGV to ensure that the entire site, which will ultimately be developed by several different parties, achieves the single holistic development vision. As illustrated in the figure below, the site will be developed in five phases, with enabling works having started start in late 2020, with development continuing until 2038.

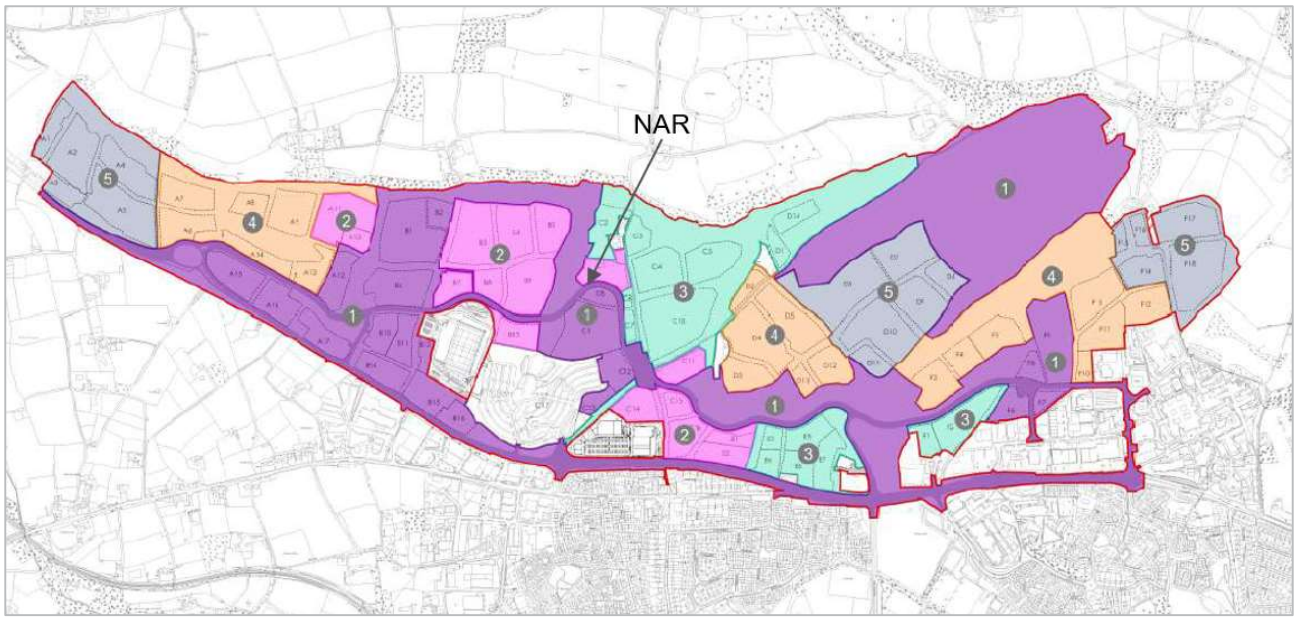


Figure 3 – LGV Construction Phases

Phase	Year	Total housing completed
Phase 1	2020 - 2024	751
Phase 2	2025 - 2029	923
Phase 3	2028 - 2032	698
Phase 4	2030 - 2035	737
Phase 5	2034 - 2038	691
		3,800

Table 1: Phasing and house numbers

It should be noted in Figure 3 above that housing will only be provided in the plot areas shaded yellow in Figure 2. This means that the majority of housing development in the early phases will be concentrated around the Park and Ride and close to the NAR.

1.4 Utilities Strategy

A utilities and drainage strategy has been prepared in conjunction with the site Masterplan and is included as Appendix A.

The strategy proposes a plan for the delivery of the package of utilities required to serve the LGV. A key element to the utilities strategy is to provide a new ‘spinal services corridor’ from which individual

developments can be supplied as they are built out over the eighteen year programme. This new spinal corridor is to be within a new Northern Access Road (NAR).

Whilst the utilities and drainage strategy has been provided for background, this SMT is concerned solely with the provision of strategic mains for water, gas and telecoms within the NAR.

1.5 Northern Access Road (NAR)

The NAR is a new vehicle, pedestrian, and cycle-way, circa 3km long that will contour through the LGV in an approximate west - east direction. The NAR will be constructed between 2021 and 2024 and will be built with several stub junctions which are to provide future road access connections to the development plots, as per the phasing plan.

It is proposed that all strategic utility infrastructure (power, water, gas and telecoms) will be supplied via service corridors within the NAR. As the NAR construction will be commencing in advance of phases 2 to 5. The major cost of implementing new networks is in the ground works plus the resulting disruption caused. This is significantly reduced where pipeline, ducting and cabling is provided as part of the early stages of the design and included in the NAR construction phase. The strategic utility infrastructure will comprise the required utilities within a services corridor along the NAR, with spurs at junction locations to supply the future development plots.

Key dates for the NAR construction programme are outlined below

- Mobilisation- September 2021
- Earthworks- November 2021
- Complete Gas Infrastructure, Telecom's Infrastructure and Water Infrastructure – April 2022

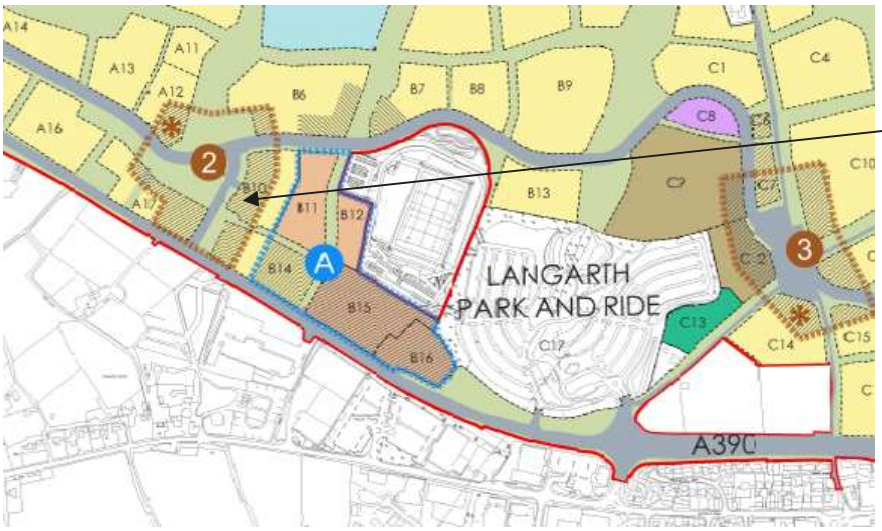
The NAR will accommodate the strategic infrastructure routes for water, telecoms, powers, gas, and district heating system, including lateral spurs/connections to supply to the development sites. It should be noted that the SMT and this document is concerned with water, telecoms and gas only. A critical challenge is the NAR construction is due to start in 2021, with first supplies to Phase 2 being required by April 22, hence co-ordination of utilities construction within the overall NAR construction programme will be critical.

Arcadis has prepared a package of drawings showing the utilities co-ordination design within the NAR and these plans, including typical cross sections for the NAR, are contained within Appendix B.

1.6 Utilities Procurement Strategy

There are several factors which make the LGV utilities strategy different to a typical development:

- Whilst the majority of the site is being developed by Cornwall Council as Master Developer, the majority of the land is outside of the Council's ownership, therefore the end developer is not known yet.
- The large scale and long timescales for development mean that the strategy needs to be sufficiently flexible for plot connections.
- The NAR provides a logical route for installation of utilities infrastructure to serve development sites which will be connected via side road networks. Th NAR is being funded by central government, requiring completion by 2024. The utilities strategy aims to avoid breaking into the NAR surfacing at a future date.
- Water, gas and telecoms are all located within or close to the A390, therefore the intent is to bring these services from the A390 into the site and to use the NAR the strategic utilities corridor. Water and Telecoms have already been partially brought to site via the Interim Link Road which connects the NAR to the A390 to the west of plots B10 and B14:



- Initial designs prepared by Arcadis aim to co-ordinate with the NAR design and construction being undertaken by CORMAC. These designs show utility locations and side road crossing and access details required in order to avoid re-excavation once the NAR construction is completed. Utility providers will be required to adopt and validate this preliminary design and to undertake further feasibility and subsequent detailed design, including co-ordination with CORMAC.
- All utilities are to be designed and constructed to allow adoption as soon as possible by statutory undertakers.

The overall intention therefore is to provide strategic utilities within the NAR, which will become a Cornwall Council highway, with individual plot developers applying to statutory undertakers for connections through the normal process.

We are mindful that the deregulation of utilities allows for inset arrangements which we are also interested in exploring as part of the SMT process.

The SMT will be used to refine the Invitation to Tender (ITT) which is planned for issue in April 2021. The intention within the ITT is to set out water, gas and telecoms as separate lots, with bids being accepted for one, two or all three lots, with the intention of identifying value for money where economics of scale and innovations can be achieved.

The design and construction of all assets must comply with relevant industry standards and in accordance with Good Industry Practice. The utility providers will be required to comply with the following requirements:

- Conducted in accordance with adoptable standards
- Be based on the latest Northern Access Road (NAR) design release (Appendix B)
- In accordance with third party assets proximity distances
- Any required protection measures (e.g. protection slabs)
- The utility assets will be in the ground before the activation date, this is especially relevant to potable water
- Guarantee of utility adoption (constructed to the future adoptable standards)
- Utility solutions must be planned with reference to the NAR construction programme to avoid the digging up the NAR following the construction phase Utility solutions must be planned with reference to the NAR construction programme (key dates in Section 1.5), to avoid the digging up the NAR following the construction phase
- Reduce energy consumption and emissions through a low-carbon design and construction approach

2 Potable Water

The provision of strategic water supply infrastructure within the NAR is to include all water mains shown on the utilities co-ordination design drawings within Appendix B. This briefly comprises:

- The 315OD trunk main within the cycleway on the northern side of the NAR
- All branches off the trunk main (individual sizes TBC), to be brought into the stub junctions
- All ancillary items (valve work etc). As required for the water network to be an adoptable standard
- Management of the new network until it is adopted by the local water authority

2.1 General Principles

Water services for the site could be provided by a Statutory Undertaker (SU) or a "New Appointments and Variations" (NAVs) company.

Developers and/or Self-Lay Providers (SLPs) appointed by the Developers who choose to self-lay water mains and/or service connections for the LGV developments must comply with the Code of Practice for the "Self-Laying of Water Mains and Services – England and Wales".

SLPs shall be competent for all Contestable elements of the works, in the range of design, project management, construction, testing, commissioning and connection activities necessary for them to provide new water distribution systems on sites. Any assets constructed under self-lay provisions remain the responsibility of the SLP until the mains are permanently connected.

The SLP is responsible for ensuring that the designer liaises with the Fire and Rescue Authority.

2.2 Design Principles

The water supply for the site will be drawn from the existing trunk distribution main in the A390. This needs to be confirmed with South West Water (SWW) to ensure that there is sufficient capacity to serve the entire development.

When preparing the design for new mains and services, the provider shall consider the need to:

- provide adequate hydraulic capacity to deliver the required standards of service to customers, whilst preserving wholesome water quality by avoiding excessive retention or travel times for water supplied;
- provide efficient and flexible operation of the water distribution system with an optimum number of control points and surface assets to mitigate future maintenance costs whilst maintaining continuity of supply.

2.3 Specific Build Requirements

As part of the sustainability aspirations for the development, there are opportunities to reduce and to re-use water within the site (grey water re-use), which in turn would reduce the demand placed on water from the existing trunk distribution main. The requirements for innovation are contained within Section 1.1.

2.3.1 Demand

See Section 4.2 and 4.3 of Appendix A for details of the required demand.

2.3.2 NAR Programme Considerations

The strategic utility infrastructure will be laid within a multi-services corridor along the NAR, with spurs at required locations (mainly located at junction with side roads) to supply the development plots.

The provisional key dates for the NAR construction programme, are as follows:

- Interim Link Road – 2020-2021
- NAR Mobilisation- September 2021
- NAR Construction (earthworks) - November 2021
- Complete Water Infrastructure – 2024 (following NAR construction programme)
- NAR Completion - 2024

The site will be developed in five phases as shown in Table 1.

A critical challenge is the NAR construction is commencing in advance of the site developments.

2.4 Key Challenges / Market solutions

The key challenge is that the Water Industry Act requires at least two properties to have reserved matters planning permission before a water authority can provide a Water Requisition. This will prohibit the installation of all the required strategic water infrastructure by water requisition during the NAR construction programme.

Cornwall Council are inviting offers with solutions to this challenge. For example, installation of all strategic water infrastructure during the NAR construction. In his instance, Cornwall Council would require ongoing maintenance services of the assets until such time they are adopted by the local water authority (considering the phased build out programme of the development as per Section 1.3). The services should also include co-ordination with the local authority up to, during and on completion of the adoption process.

3 Energy (Gas)

The provision is to include all gas assets shown on the utilities co-ordination design drawings within Appendix B. This briefly comprises:

- A MP gas pipeline form the A390 to the NAR via an existing bridleway, and along south corridor of the NAR to a PRI, total length approx. 0.5Km;
- A LP gas pipeline within the cycleway on the northern side of the NAR, total length approx. 0.7Km;
- Construction of PRI
- Required connections and ancillary items TBC
- Management of the new network

3.1 General Principles

Energy services for the site could be provided by a Statutory Undertaker (SU) or an Independent Gas Transporters (IGTs).

Developers shall appoint a Self-Lay Customer (SLC) which will procure the design and construction of the required works and the protective works (if any) in accordance with all relevant statutory requirements, regulations, codes of practice (both statutory and otherwise) and industry recognised practice such that they are fit-for-purpose.

SLC should act as a Reasonable and Prudent Operator (RPO), and shall exercise that degree of skill, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced operator complying with applicable law engaged in the same type of undertaking in the same or similar circumstances and conditions.

Any asset constructed under self-lay provisions remain the responsibility of the SLC until the assets are permanently connected.

3.2 Design Principles

The gas supply for the site will be drawn from the A390. This need to be confirmed with Wales & West Utilities (WWU), which is the incumbent gas supplier in the area, to ensure that there is sufficient capacity to serve the development.

3.3 Specific Build Requirements

3.3.1 Demand

At the time of this report it is assumed a demand for 1500 homes.

3.3.2 Utility Location

As shown in Figure 3, the current design methodology is to lay a MP gas pipeline from the A390 (point A) via an existing bridleway and along the NAR south footway to a PRI (Pressure Reduce Installation).

From the PRI, a LP gas pipeline will run eastward along the NAR northern footway/cycle-track to supply the central developments included in Phase 2 – see Figure 4, ending at Point B.

Cornwall Council are looking for offers from the market to lay the apparatus described above between Point A and Point B (including the PRI).

Please refer to the drawings contained in Appendix B detailing the proposed route for the utility within the NAR.

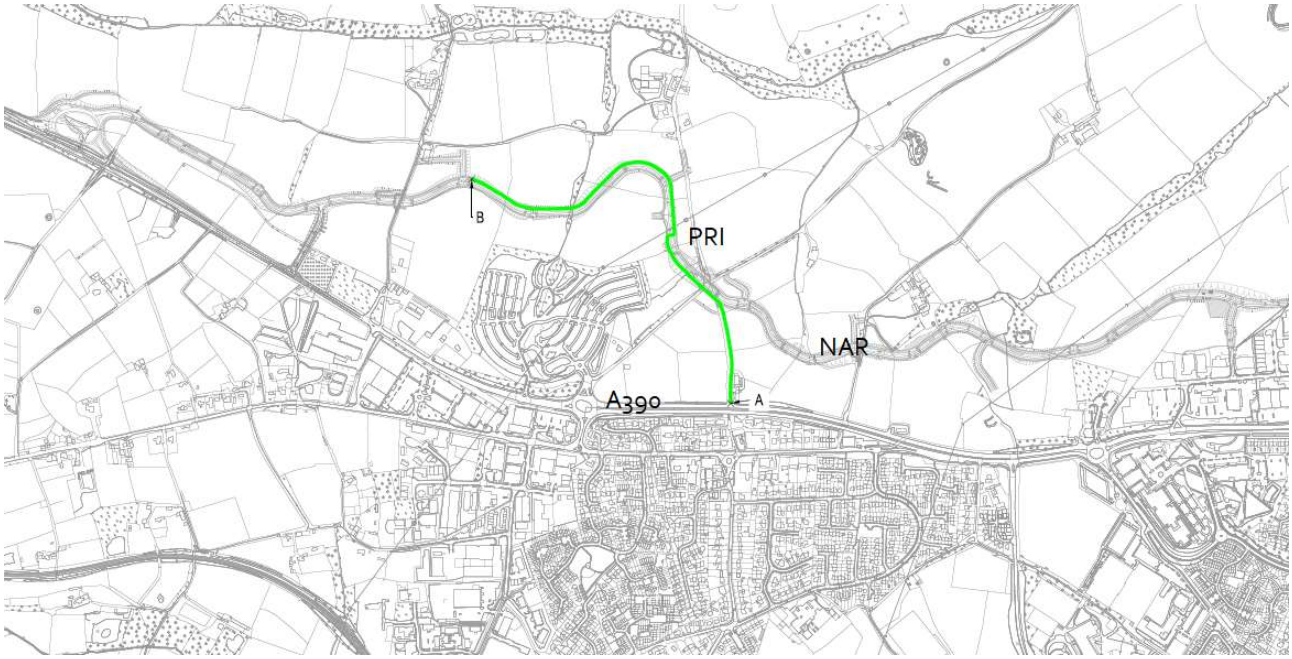


Figure 4 – Gas Supply to Site

3.3.3 NAR Programme Considerations

The strategic utility infrastructure will be laid within a multi-services corridor along the NAR, with spurs at required locations (mainly located at junction with side roads) to supply the development plots.

The key dates for the NAR construction programme are - please note stage delivery dates are under review:

- Interim Link Road – 2020-2021
- NAR Mobilisation- September 2021
- NAR Construction (earthworks) - November 2021
- Complete Gas Infrastructure – April 2022
- NAR Completion – 2024

The site will be developed in five phases as shown in Table 1.

- The site will be developed in five phases as shown in Table 1.

3.4 Key Challenges / Market solutions

A critical challenge is the NAR construction commencing in advance of the site developments and capacity within the local grid.

4 Telecommunication

The provision of a strategic network alongside the NAR including inspection pits as shown on the utilities co-ordination design drawings within Appendix B.

The coordination drawings are showing two sperate networks (for two separate providers), this brief is for a single provider of:

- A single network made of two cable routes within the cycleway on the northern side of the NAR
- All ducting diameter assumed 100mm
- Additional ancillary items as required by the service provider
- Management of the new network

4.1 General Principles

Telecommunication services for the site could be provided by a Statutory Undertaker (SU) or an Independent Service Provider (ISP).

Developers who choose to carry-out the Contestable works must comply with the Code of Practice for Installation of Apparatus Intended for Connection to Certain Telecommunication Systems.

4.2 Design Principles

By forward thinking through the overall design and build of the village, the telecommunications network infrastructure should be deployed in the most innovative and sustainable manner.

Openreach cables and ducts are present outside the site boundary along the A390, it will be necessary to tap into this route to pick up services that route to ISPs and main telecoms network providers.

When preparing the offer for services, the provider shall consider:

- The high-level strategic view for the LGV as set out within the utilities and drainage strategy document.
- The availability for other telecoms providers to use shared ducting and chambers (open access)
- All civils works will typically be undertaken by the developer.

4.3 Specific Build Requirements

4.3.1 Demand

Demand will relate to the proposed masterplan provision and the digital infrastructure aims set out within the utilities and drainage strategy document.

4.3.2 Utility Location

The current design methodology is to lay two separate networks along a multiutilities-corridor in the NAR northern footway. Though, the preferred option is to have a single network along the Nar and spurs supplying the developments, with ducts crossing the NAR where required.

Please refer to the drawings contained in Appendix B detailing the proposed route for the utility within the NAR.

4.3.3 NAR Programme Considerations

The strategic utility infrastructure will be laid within a multi-services corridor along the NAR, with spurs at required locations (mainly located at junction with side roads) to supply the development plots.

The key dates for the NAR construction programme are - please note stage delivery dates are under review:

- Interim Link Road – 2020-2021
- NAR Mobilisation- September 2021
- NAR Construction (earthworks) - November 2021
- Complete Telecoms Infrastructure – 2024 (following NAR construction programme)
- NAR Completion - 2024

The site will be developed in five phases as shown in Table 1.

4.4 Key Challenges / Market solutions

A critical challenge is the NAR construction is commencing in advance of the site developments.

APPENDIX A

Langarth Garden Village Utilities and Drainage Strategy

APPENDIX B

NAR Utilities Drawings

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