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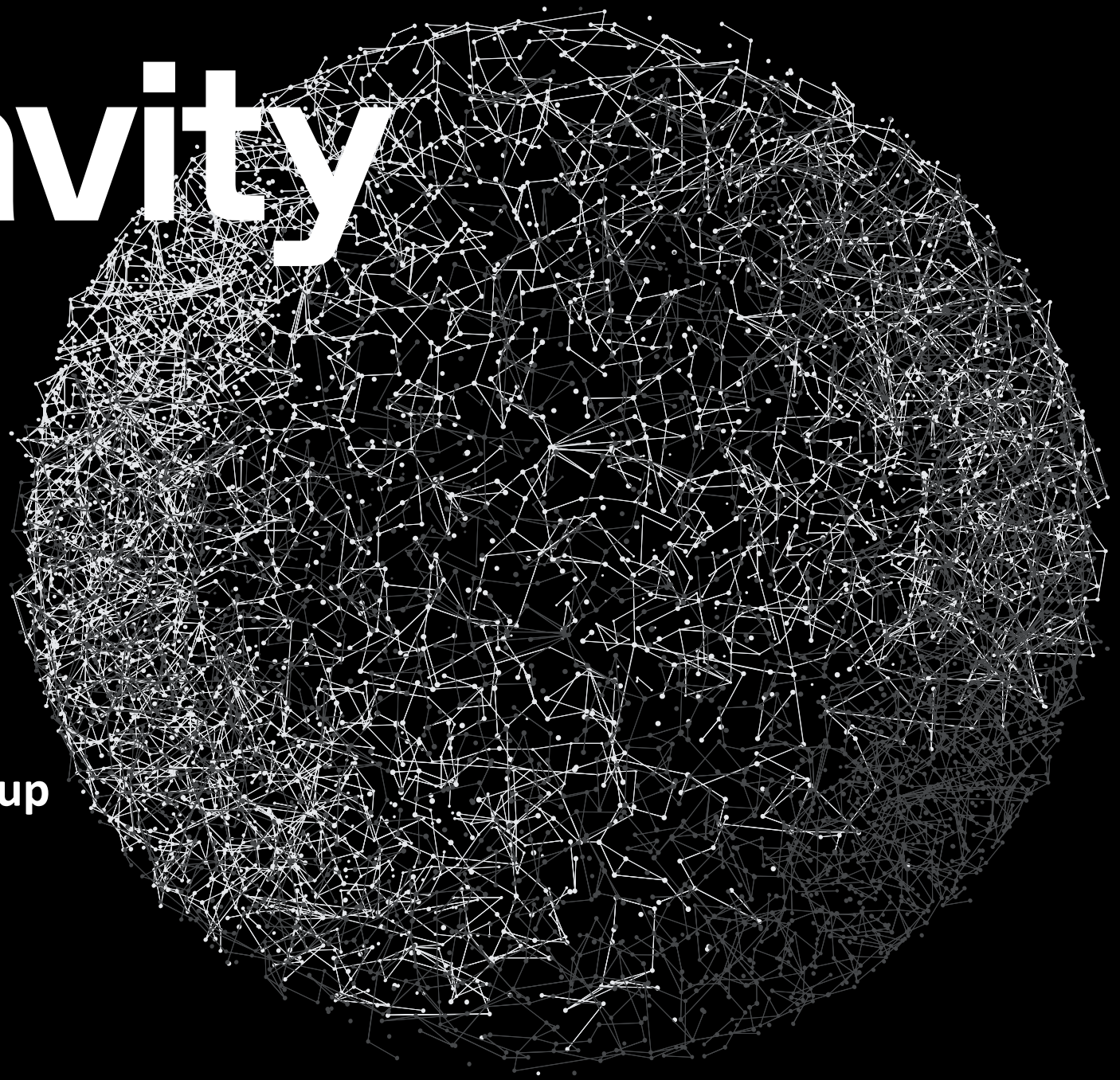

LDO Delivery Group
Meeting Three
13 January 2021

Gravity

Item	Subject	Timings	Lead
1.	Welcome and Focus of the Meeting	11.00 – 11.10	CP
2.	Minutes of Delivery Group Two on 23 November	11.10 – 11.15	JT
3.	Digital Vision – opportunity for questions	11.15 – 11.30	PMcC
4.	Community Engagement – update	11.30 – 11.35	BL
5.	Creating Social Value: ESG policy and Social Value Programme – ideas welcome	11.35 – 11.50	CP
6.	Ecology Surveys and questions	11.50 – 12.05	KGo
7.	Emerging Spatial Principles – input welcome	12.05 – 12.30	FO
8.	Environmental Assessment – Programme and Assessment Scenarios	12.30 – 12.50	SB
9.	AOB and Next Steps • Delivery Group Meeting Four: 23 February 2.30 – 4.30 - Concept Plans - Legal advice on consenting strategy – rail and EA - 5G Create/ freeport bid/ rail - Transport sub-group update - Utilities and Infrastructure update - Update from Social on community engagement	12.50 – 1.00	CP

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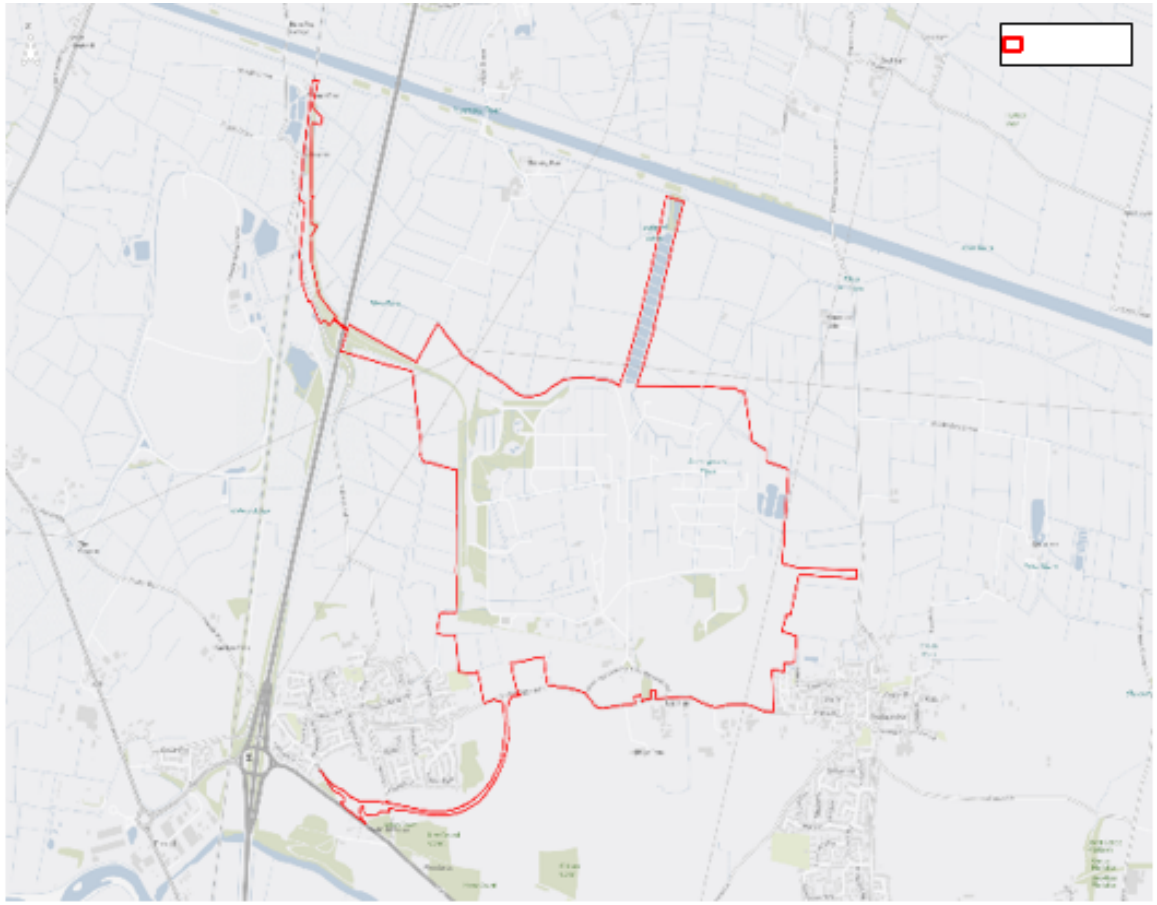
Minutes of Delivery Group Two

Approval of monthly Delivery Group Minutes

- Circulated on 14/15 December 2020



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Digital Vision

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Section Contents

1.0	Introduction
2.0	Context / Trends
3.0	Research / Inputs
4.0	Digital Vision
5.0	Delivering the Vision
6.0	Next Steps

Arup is an independent international firm of designers, planners, engineers, consultants and technical specialists offering a diverse range of professional services across the built environment domain. The Advanced Digital Engineering Group has a proven track-record of delivering digital masterplans for forward-thinking developments, supporting them to deploy and exploit emerging digital technologies, and to harness the benefits they deliver.

To view a selection of Arup's digital services and projects, please visit www.arup.com/expertise/services/digital

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Digital Vision

Gravity will be a **trailblazing smart campus and community**, a **physical and virtual hub** that **pioneers the use of digital connectivity and data** to **enhance, streamline and decarbonise every facet of life** for its users.

Enabled by a **flexible, scalable and future-proofed digital infrastructure** foundation, along with an **open and integrated data management layer** and **suite of cutting-edge end-user services**, Gravity will:

- **Catalyse clean growth and high-value innovation**
- **Create a vibrant, inclusive and thriving community**
- **Spearhead the active travel and future mobility agendas**

Gravity's market-leading digital offer will **attract the world's most innovative and conscientious businesses**, **accelerating the UK's transition to clean economic growth** and **driving widespread transformation in local communities**.

The following pages provide examples of the digitally-enabled initiatives that could be implemented to make this vision a reality.

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Market Trends

There are a number of consumer-driven market trends that will have a significant impact on the way people want to work, live and play in the future.

A Need for Convenience	A Preference for Personalisation and Customisation	The Prioritisation of Health and Wellbeing	The Rise of the Sharing Economy	A Drive Towards Clean and Ethical Consumption
Millennials are more likely than other generation to view work-life balance and not enough free time as major career concerns.[1]	*22% of consumers are happy to share data in return for a more personalised product or service.*[2]	*72% of Generation Z say managing stress and mental health is their most important health and wellness concern.*[3]	*25% of UK adults are already sharing online, and that global sharing economy revenues could rise to £230bn in 2025.*[4]	*49% of those under 24 have avoided a product or service due to its negative environmental impacts.*[5]

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Technology Trends

Technology has the potential to radically change the way people live, work and play, from how organisations manage infrastructure and assets, to how they deliver critical services. Digital technologies, the services they enable, and the skills and connectivity required to use them are beginning to have a significant effect on communities, and on placemaking outcomes such as economic growth, social mobility, community engagement, wellbeing and carbon impact.

These outcomes are traditionally associated with the physical characteristics of the built environment. Developments that do not integrate these previously separate disciplines are unlikely to achieve their short-term objectives, let along their long-term aspirations. More importantly, the people living within these developments will struggle to thrive in an increasingly digital world.

		Current Wave		
Wave 1 (1990-2010)	**Wave 2 (2005-2020)**	**Wave 3 (2010-2030)**	**Wave 4 (2020s-2040s)**	**Wave 5 (2030s-2050s)**
Personal Computers	Social Media	Internet of Things	Nano-technology	Full Artificial Intelligence
Connectivity	Mobile (3G/4G) & Smartphones	Smart Machines (AI, Robotics, AVs, Drones)	Androids & Advanced Biometrics	Quantum Computing
Online Content	Big Data	3D Printing & Additive Manufacturing		
Internet and eCommerce	Cloud Computing	Immersive Technology (AR & VR) & Wearables		
		Blockchain & Distributed Trust		
		Private Energy		

Image Reference: Urban Land Institute, Urban Technology Framework: 12 Key Trends and What Drives Them, 2019

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Innovation Locations – Critical Success Factors

Across the globe, local authorities, landowners, planners and developers are seizing the huge opportunities presented by innovation and disruption in advanced, high growth industries.

Large Out-of-Town Innovation Zones

Large-scale zones dedicated to innovation, many of them configured as ‘special economic zones’ or ‘enterprise zones’.

Enterprise Zone (UK)

Regional Innovation Corridors

Often established to acknowledge an interconnected economic area, innovation corridors aim to optimise key assets and create an innovation-friendly model using specialisation, concentration and skills development.

***Examples**: London-Stansted-Cambridge (UK), N2 Innovation Corridor Boston (USA)*

Site Vacated by Major Employers

Innovation centres are springing up on sites that have been vacated or are being ‘wound down’. These sites include airports, military bases and relocating hospitals.

***Examples**: Berlin TXL (Germany), Brooklyn Navy Yard (USA)*

Critical Success Factors

1	Strategic location relative to other markets and centres in regional innovation system	✓
2	Flexible master planning and development parcels	✓
3	Agreement and assurances about major transport links	✓
4	Simplified and easy-access ‘one-stop’ systems for businesses to navigate	💡
5	Attraction of highly-skilled workers	✓

Reference: The Logic Of Innovation Locations, Future Cities Catapult, 2017

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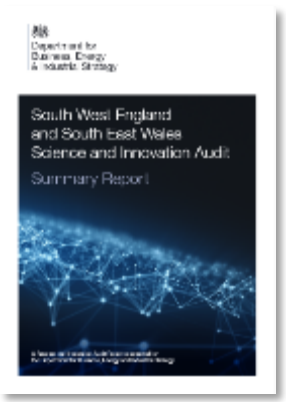
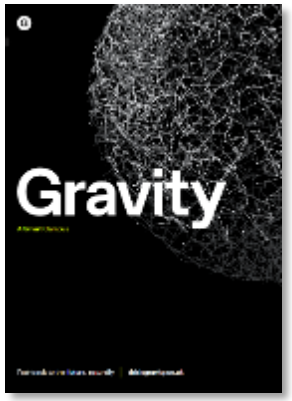
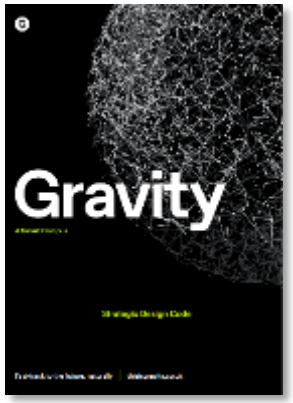
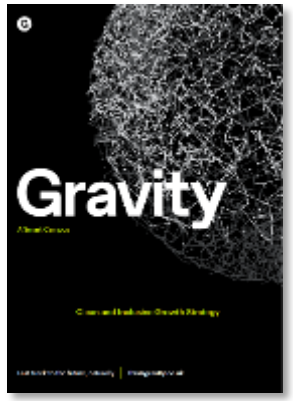
Research

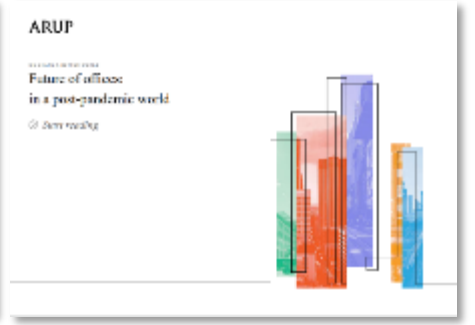
Arup have undertaken a two-pronged research exercise to inform the creation of a Gravity Digital Vision. Arup reviewed the documents shown below to gain a thorough understanding of the context and ambitions surrounding the Gravity site











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Stakeholder Views: Opportunities

1) A first-of-its kind digitally-enabled campus

2) An enabler of Gravity's zero carbon ambitions

3) A test-bed for high-end disruptive technologies

4) A catalyst for local area transformation

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Stakeholder Views: Challenges

1) Changes to working practices and expectations
2) Site location and access
3) Integration with surrounding areas
4) Behaviour change to support digital and zero carbon agendas
5) Pace of digital change

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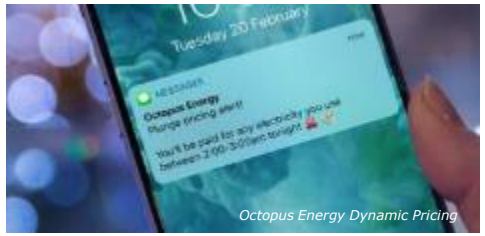
Digital Vision – Potential Digital Initiatives

- **Catalyse clean growth and high-value innovation** in the South West and further afield through the provision of flexible, connected and remote workspaces, low-carbon energy, on-site innovation ‘test beds’ and a regional digital innovation alliance.

Building Management Systems (BMS)	Flexible and Reprogrammable Spaces	Energy Demand Management (EDM)	Borderless Working	Innovation Test Bed
				
Arup’s Neuron AI-powered Building Management System	*Carlo Ratti Hyper-Localised Environments*	*Octopus Energy Dynamic Pricing*	*Outdoor Solar-Powered Workstations*	*Olympic Park Autonomous Shuttle Test Bed*

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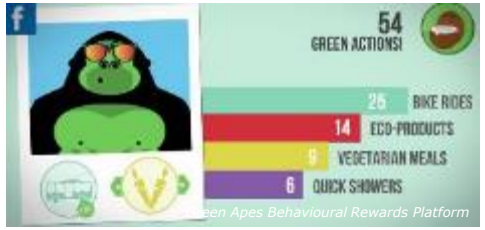
Digital Vision – Potential Digital Initiatives

- **Create a vibrant, inclusive and thriving community** by connecting people, incentivising collaborative and sustainable behaviours, showcasing the natural environment and curating a dynamic, health and wellbeing-focused recreational offer.

Gravity Campus Application	Behavioural Rewards Platform	Civic Crowdfunding	Interactive Environments	On-Demand Leisure
Vall d'Hebron Smart Campus App	 een Apes Behavioural Rewards Platform	The Crowdfunded Hamworthy Park Outdoor Cinema	Carlo Ratti Interactive Water Pavilion Pavegen energy-generating pavement	Meanwhile-Use Temporary Stackable Sports Pitches

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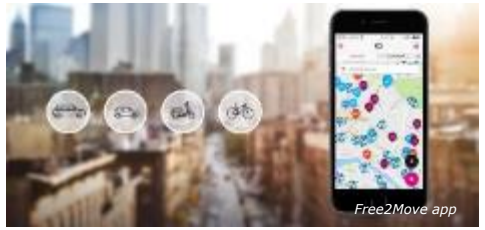
Digital Vision – Potential Digital Initiatives

- **Spearhead the active travel and future mobility agendas** through the creation of a national exemplar integrated mobility hub and trialling of next-generation services.

Digital Wayfinding	Mobility as a Service (MaaS)	Shared Micro-Mobility Schemes	Autonomous Transportation	Low-Carbon Deliveries
Peerless AV Outdoor Display	 Free2Move app	Jump e-Bikes	Trapezio Electric Autonomous Bus	Delivery Start-Up Nuro

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Delivering the Vision

Gravity's Digital Masterplanning Model, developed by Arup, defines the various layers of underpinning technology, infrastructure and support that are required to enable the successful delivery of the digital vision.

Assets and Infrastructure
(Ducting, chambers, ICT rooms, etc)

This layer of the Digital Masterplanning model refers to the assets and underlying infrastructure that is required to enable the provision of fixed and wireless digital connectivity services.

Connectivity and Networks
(Optical fibre cabling, radio technologies, LAN, WAN WLAN, etc)

This layer consists of connectivity mediums or networks, such as fixed fibre cabling, which allow the efficient transmission of information around the site and within buildings.

Data
(Data sources, schemas, governance approaches, etc)

This layer of the model refers to the collection, storage, analysis, visualisation and sharing of data from digitally-enabled assets and services in order to optimise operations, enhance user experiences and realise cost savings.

End-User Services
(Consumer-facing applications and required hardware & software, etc)

This layer refers to the ways in which end users will be able to interact with and benefit from the various digital services available on Gravity.

Enablement
(Digital literacy programmes, innovation facilitation activities, etc)

This layer refers to skill development, community engagement and inclusion programmes and initiatives that will be put in place to ensure that everyone is able to participate in the Gravity Smart Campus.

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A Flexible, Adaptable and Open Approach to Digital Infrastructure Provision

Gravity will build an open and flexible infrastructure foundation which will seamlessly meet the initial needs of tenants, while also being adaptable to accommodate the unknown and ever-changing requirements of future tenants. In addition to deploying more conventional digital infrastructure, Gravity will be creative and innovative in their use of non-conventional assets, such as streetlighting poles and bus shelters, to deliver an unrivalled suite of digital connectivity and services. At a high-level, the initial digital infrastructure provisions at Gravity will be:

Assets and Infrastructure
(Ducting, chambers, ICT rooms, etc)

Connectivity and Networks
(Optical fibre cabling, radio technologies, LAN, WAN WLAN, etc)

Data
(Data sources, schemas, governance approaches, etc)

End-User Services
(Consumer-facing applications and required hardware & software, etc)

Enablement
(Digital literacy programmes, innovation facilitation activities, etc)

- The principal infrastructure provision needed to support the site wide provision of fixed and wireless telecoms services is a duct network. This network will be installed within the primary utility corridors, and associated secondary and tertiary routes, and will serve residential, commercial and recreational buildings, as well as estate management services such as CCTV, wayfinding totems and digital signage. The routing of the duct network will need to be coordinated with other utility services and contiguous with services in neighbouring areas. In addition to a duct network, space within buildings will be required to host the rooms, routes and risers associated with fixed digital infrastructure.

- To enable the provision of wireless connectivity services, a range of structures will be required to accommodate the required telecommunication equipment. Depending on the location and distribution of buildings across the site, these structures may take the form of free-standing monopole towers and/or roof-based structures. In some cases, telecommunication equipment can be integrated into building facades and street furniture assets to minimise the need for and visual impact of such structures.

- Increasingly streetlighting poles, ‘smart benches’ and bus shelters are being seen as a multi-functional asset, from which a range of smart campus use-cases can be delivered. Such use-cases include:
  - Hosting of cellular small cells
  - Delivery of public Wi-Fi
  - Delivery of environmental monitoring sensors and solutions
  - Provision of electric vehicle charging points
  - Enablement of smart parking solutions
  - Housing of defibrillators
  - Provision of emergency buttons for public safety.

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Example Contribution to Gravity Priorities

This Digital Vision will help deliver a wide range of designated priorities, highlighting digital's fundamental role in delivering a pioneering, clean growth-focused smart campus.

Wellbeing and Inclusivity @Gravity

P2	Enable the South-West to 'level up' in digital technology as part of the Heart of the South West's Local Industrial Strategy by establishing a regional digital innovation alliance.
P3	Create a 24/7 smart campus and community that provides flexibility to live, work and play.
P6	Gravity will be a test bed, home of research and development, and a host for green finance initiatives: developing new products, services, and establishing new practices to create green solutions.
P8	Invest in an array of sensors and edge computing to support wellness, deliver personalised experiences and enable ease of life through work life blended service.
P13	Opportunities for learning will be embedded throughout, from sharing research findings, shadowing trials, through to incubating start-ups and new enabling new forms of business or technological deployment.

Clean Energy @Gravity

P16	Establish smart grid infrastructure to provide flexible, and secure low cost energy to meet the commercial, residential and leisure needs and risk profiles of businesses at Gravity.
P18	To shift away from fossil-fuelled combustion technologies, maximising low carbon generation, energy storage and management on site.
P20	Collaboration and co-design of energy infrastructure to enable clean growth across industrial, residential and leisure partners and occupiers.
P22	Provide intelligent digital controls to manage clean energy systems @Gravity to enable flexibility in energy demand and pricing.
P23	To provide site wide sustainable transport solutions including rapid charging and support for hydrogen powered vehicles, accessible to the community.
P24	Use our Enterprise Zone Status to provide incubation facilities for innovative energy technologies.

Natural Resources @Gravity

P25	Creating a 'Gateway' to a natural environment super reserve through digital technology..

Clean Transport @Gravity

P32	De-carbonising transport, enabling shift to EV's and alternative fuels through investments into infrastructure that enable an interaction between transport needs and energy supply.
P33	Striving to minimise transport impacts on the strategic and local road network.
P34	Participate in research and development to offer a free port site, linked to a digital free port zone logistics and security architecture.
P35	Establish a multimodal transport infrastructure combining rail restoration, motorway to micro mobility and autonomous shuttles.
P36	Create a micro mobility grid through green infrastructure creating routes and spaces.
P37	Blend commuting and campus movement into single Movement as a Service deal (MaaS @Gravity) for occupancy based on blockchain transaction ledger. Discourage and phase out single mode travel using behavioural change and incentivisation mechanisms.
P39	Provide 5G infrastructure, sensors and edge computing to enable fully autonomous movement within the smart campus.
P41	Design corridor infrastructure to enable logistic autonomous movement and platooning.
P44	Gravity Home Hub Model to enable working from home, localised working linked to the campus, geared to reducing the overall need to travel.

Digital Revolution @Gravity

P45	Establish a digital route map and masterplan to shape the digital clean growth journey@ Gravity.
P46	Host a test bed location for research and development such as free port zone digital architecture and new housing products.
P47	Ensure underlying digital infrastructure is future proofed to seamlessly accommodate the requirements of future connectivity technologies such as 5G and 6G, and future digital services.
P48	The Gravity Campus systems will be digitally twinned and managed by a campus operations centre, to support adaptive management and enable continual optimisation.
P49	Create the open architecture for a Gravity Blockchain Ledger to enable campus transactions and accountability both in terms of building formation and operation of assets to evidence delivery on Clean Growth.
P50	Drive out learning and skills development opportunities to inspire young people and enable communities to access opportunities by forming partnerships with local and regional educational institutions.

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*Line items highlighted in purple were part of the original Phase 1 scope

Digital Workstream

Local Development Order Adoption Timeline	
Topic Area	**Next Step**
Local Development Order	Ad-hoc smart campus and community support (in line with LDO process)
Infrastructure & Connectivity	Initiate and progress discussions with fixed and wireless infrastructure and connectivity providers
	Plan and deploy infrastructure required to enable 5G Free Port Test Bed
	*Initiate wider digital infrastructure specification and planning exercise**
Data	Start compiling requirements for digital twin and identify potential providers
	Create a high-level data ownership, usage and governance framework
End-User Services	*Conduct user research to inform the selection, prioritisation and design of end-user services**
	Produce high-level business cases per digital intervention/digital service
Enablement	Develop terms of reference for the regional Digital Innovation Alliance
	Recruit members of the regional Digital Innovation Alliance
Governance	Define a high-level operating and governance model for the digital programme to ensure effective delivery and iterative improvement
Delivery Roadmap	Produce a delivery roadmap detailing the specific activities required to deliver the vision
Meanwhile Use	Explore meanwhile use options for the site to engage the local community

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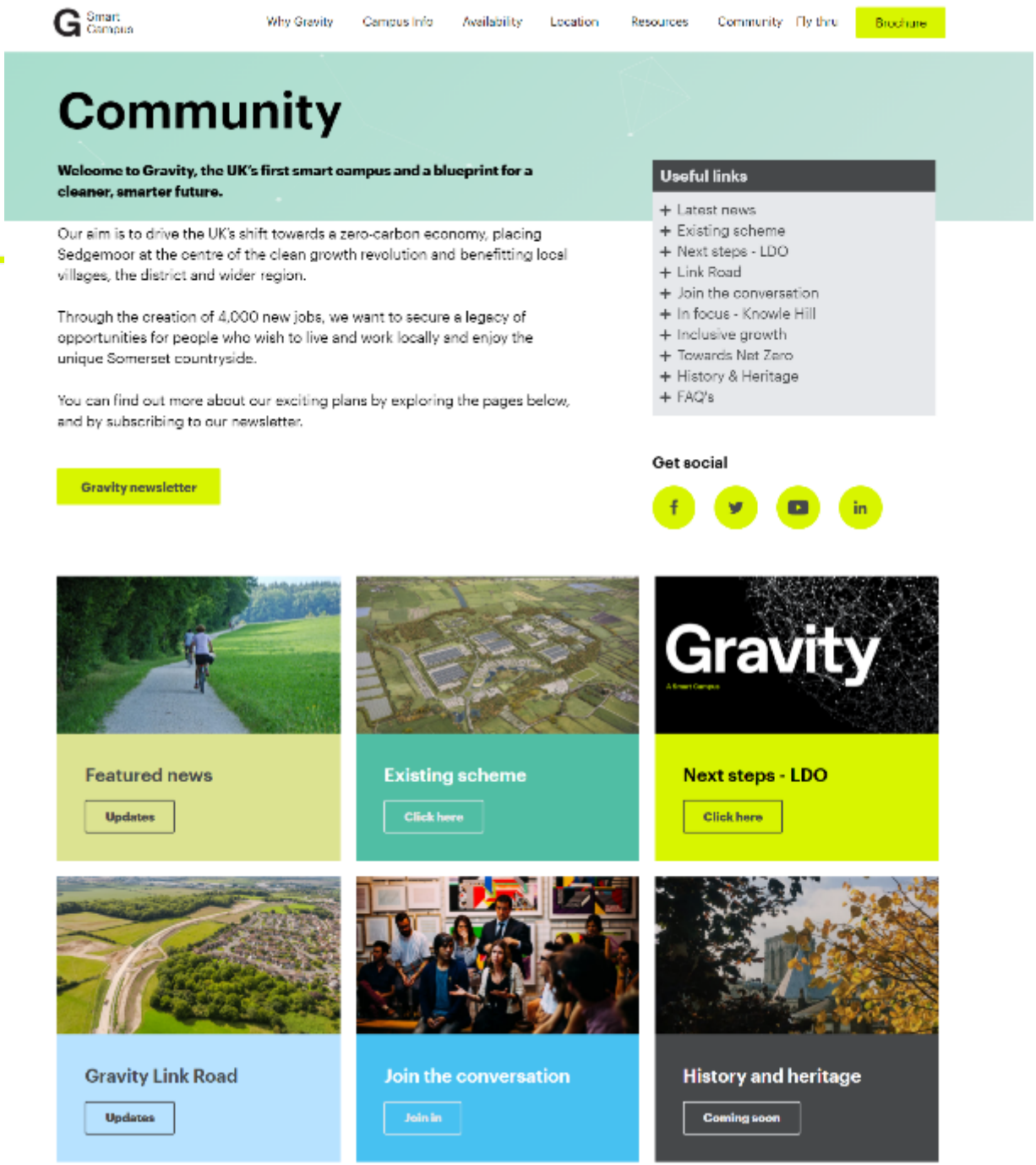
Community Engagement

- ✓ Website community section is live and attracting visitors
- ✓ https://thisisgravity.co.uk/community/
- ✓ E-newsletter sent to 250 local recipients in December

Upcoming engagement:

- ✓ Webinar
- ✓ Community outreach
- ✓ Web updates
- ✓ Media relations



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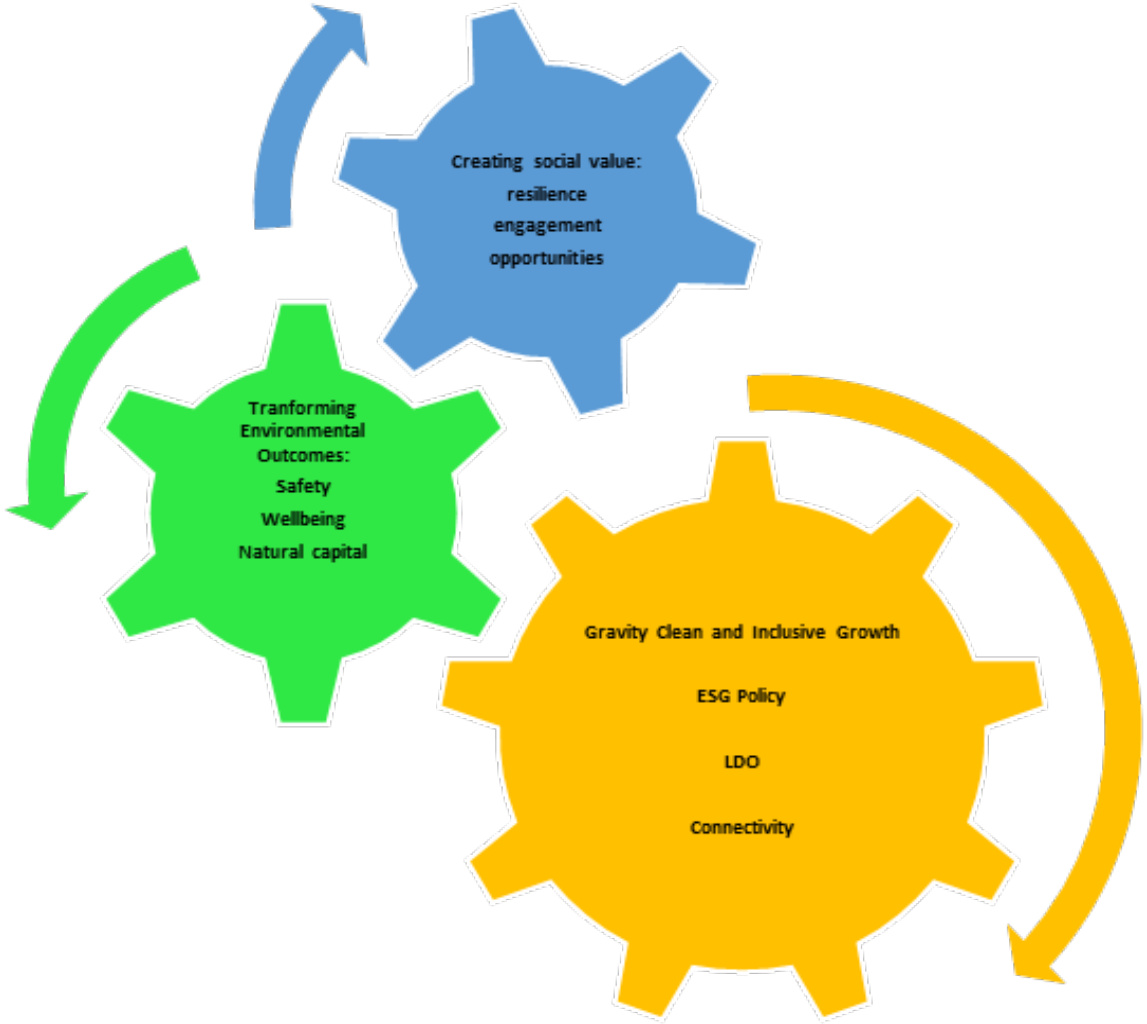
Creating Social Value



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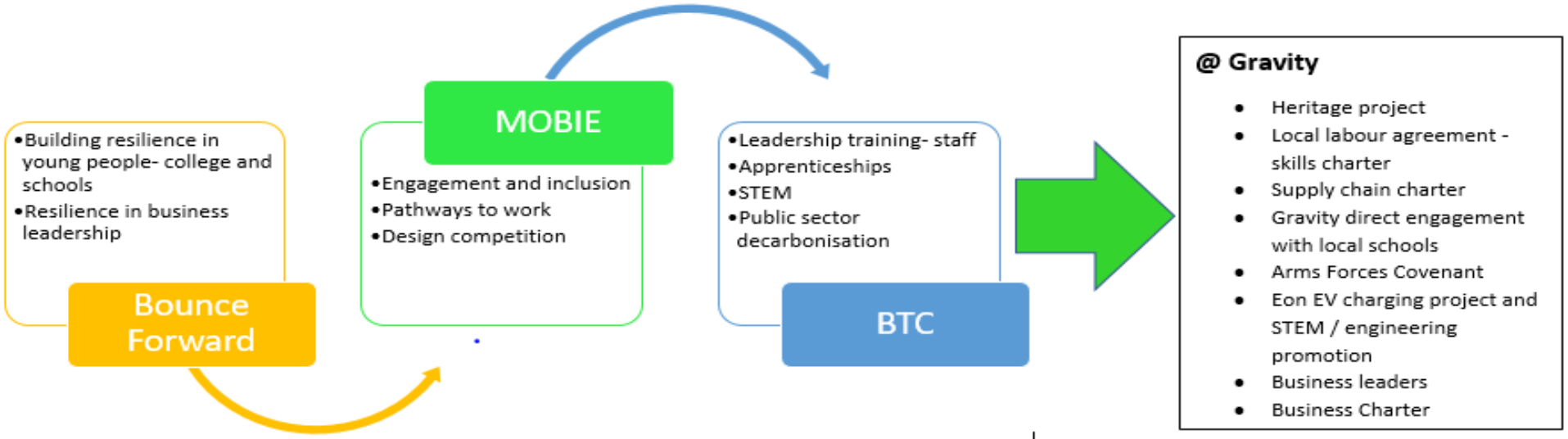
Creating Social Value @ Gravity Smart Campus and Community

Where companies make a difference socially, economically, and environmentally



Social Value Team:

- **Claire Pearce- Gravity**
- **Lucy Bailey- Bounce Forward**
- **Mark Southgate- MOBIE**
- **Peter Elliot- BTC Trust (schools)**
- **Matt Tudor/ Simon Brewer – BTC**
- **Caroline Derrick- SDC**
- **Social communications**
- **Stantec**

Emerging Actions:

- **Programme of action Jan- Nov 21**
- **Community engagement throughout 2021**
- **Working with Others – Villages Together**
- **Workforce development- Under Construction**
- **Resilience - BTC Staff Conference in Feb 2021?**
- **MOBIE design competition**
- **Arms Forces Day May 2021**

Gravity LDO Delivery Group

The Ecological Baseline

Karl Goodbun
Director
Ecology Solutions

ecologysolutions.co.uk

The Ecological Baseline

- **The site has been the subject of numerous ecological surveys since 2008**
- **A broad update of the ecology baseline was undertaken in 2020**

Scope of Update Ecology Surveys

In 2020 update surveys were undertaken of the following:

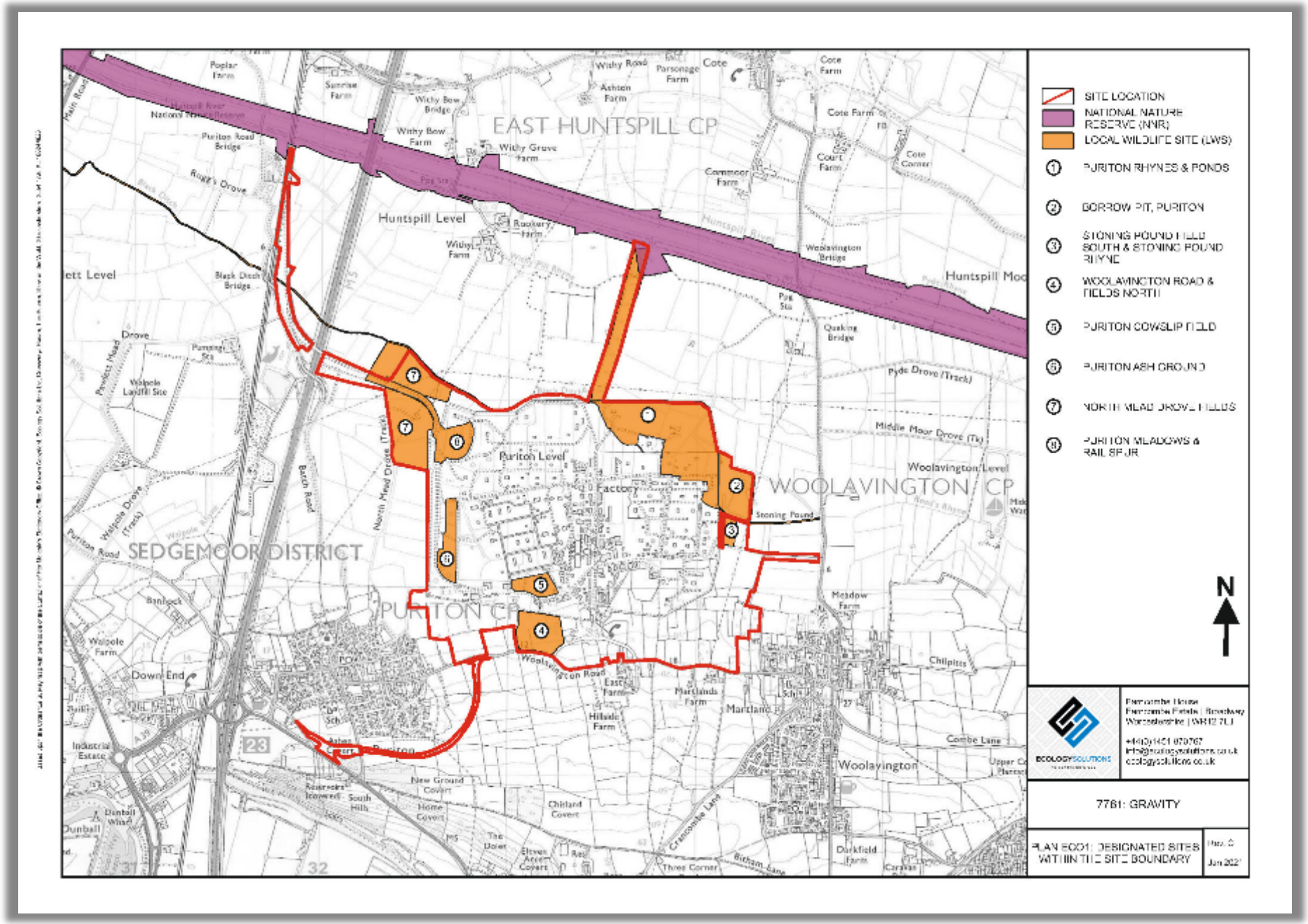
- Habitats;
- Bats;
- Badgers *Meles meles*;
- Breeding birds;
- Reptiles;
- Water Vole *Arvicola amphibius*;
- Great Crested Newt *Triturus cristatus*; and
- Invertebrates.

Designated Sites within the LDO Boundary

The River Huntspill National Nature Reserve is north of the LDO boundary, with a small section falling within the site itself.

The LDO boundary also contains eight Local Wildlife Sites of varying quality.

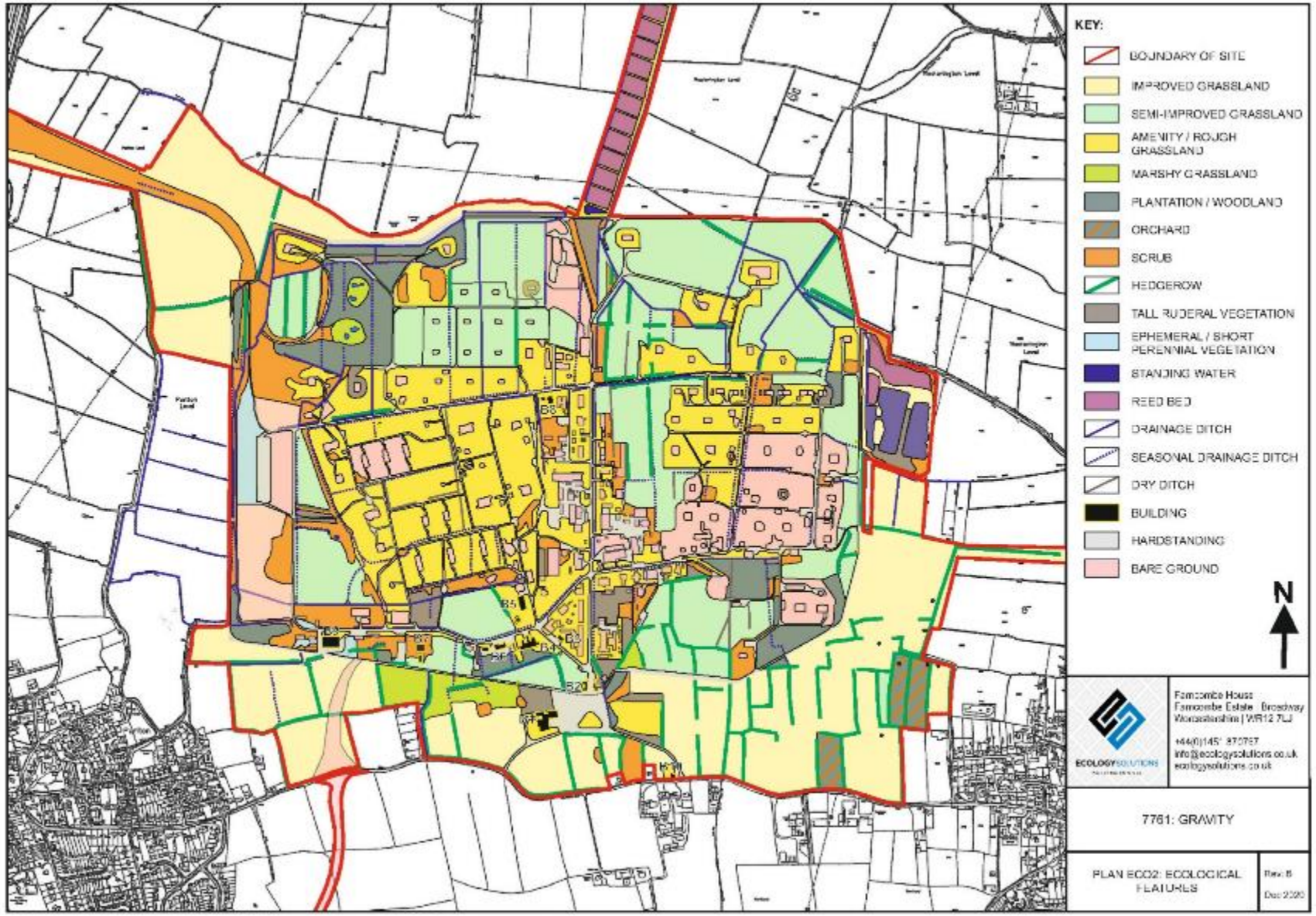
The designating features vary from site to site. The ecological condition also varies from site to site.


EAST HUNTSPILL CP
WOOLAVINGTON CP
PURITON CP
SEDGEMOOR DISTRICT
Huntspill Level
Puriton Level
Woolavington Level
Factory
Woolavington
SITE LOCATION
NATIONAL NATURE RESERVE (NNR)
LOCAL WILDLIFE SITE (LWS)
1 PURITON RHYNES & PONDS
2 BORROW PIT, PURITON
3 STONING POUND FIELD SOUTH & STONING POUND RHYNE
4 WOOLAVINGTON ROAD & FIELDS NORTH
5 PURITON COWSLIP FIELD
6 PURITON ASH GROUND
7 NORTH MEAD DROVE FIELDS
8 PURITON MEADOWS & RAILSFOR
N
ECOLOGYSOLUTIONS
Evercombe House
Evercombe Fields | Broadway
Worcestershire | WR12 7LJ
+44(0)1451 870767
info@ecologysolutions.co.uk
ecologysolutions.co.uk
7761: GRAVITY
PLAN ECO1: DESIGNATED SITES WITHIN THE SITE BOUNDARY
Rev. 0
Jun 2021

Habitats within the LDO Boundary

The following broad habitat were identified:

- **Grasslands;**
- **Woodland and Orchard;**
- **Scrub and Hedgerows;**
- **Ephemeral vegetation;**
- **Ditches, rhynes and ponds;**
- **Reed bed; and**
- **Bare ground, Buildings and Hardstanding.**


KEY:
BOUNDARY OF SITE
IMPROVED GRASSLAND
SEMI-IMPROVED GRASSLAND
AMENITY / ROUGH GRASSLAND
MARSHY GRASSLAND
PLANTATION / WOODLAND
ORCHARD
SCRUB
HEDGEROW
TALL RUDERAL VEGETATION
EPHEMERAL / SHORT PERENNIAL VEGETATION
STANDING WATER
REED BED
DRAINAGE DITCH
SEASONAL DRAINAGE DITCH
DRY DITCH
BUILDING
HARDSTANDING
BARE GROUND
N
Farncombe House
Farncombe Estate Broadway
Worcestershire WR12 7LJ
+44(0)1451 870767
info@ecologysolutions.co.uk
ecologysolutions.co.uk
7761: GRAVITY
PLAN ECO2: ECOLOGICAL FEATURES
Rev: B
Dec 2020

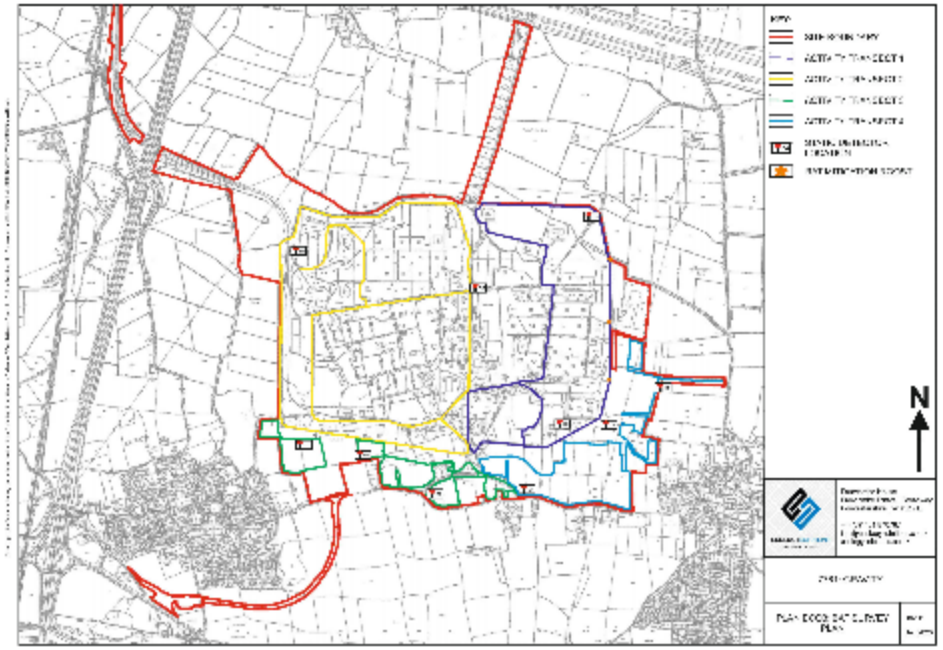
Key Findings: Bats

Activity and automated surveys were undertaken between May and October 2020.

10 bat species were recorded including Lesser and Greater Horseshoe and Barbastelle.

Greatest activity was recorded in the south and east.

Bat roosts were recorded within 4 buildings in the south of the site.



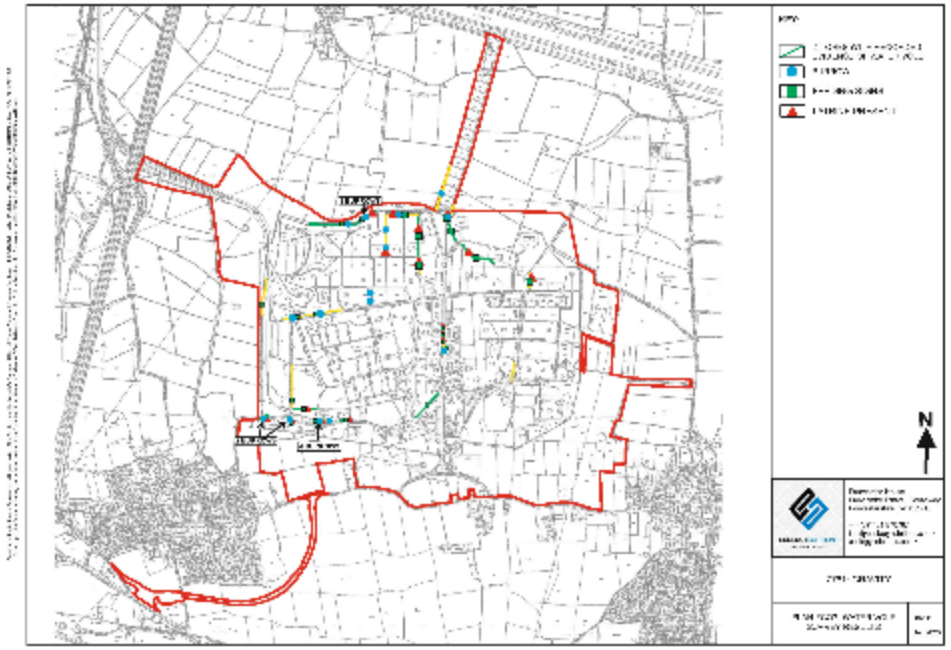
Key Findings: Water Vole

Surveys were undertaken of rhynes and ponds within the site.

Evidence of low levels of Water Vole presence was recorded.

Voles are typically associated with the permanently wet rhynes.

Mink continue to be observed onsite.



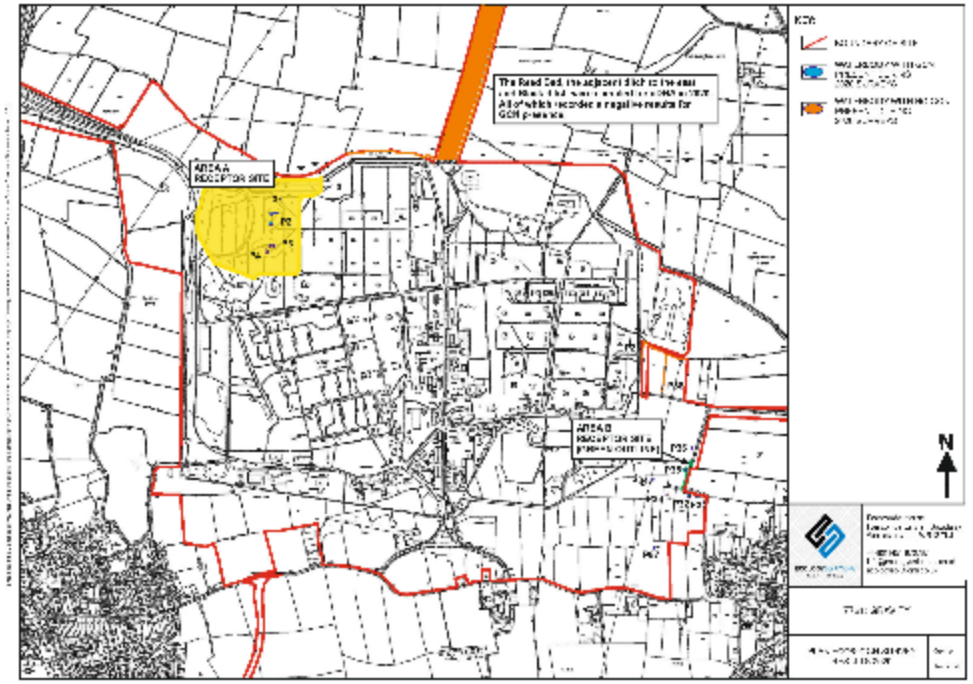
Key Findings: Great Crested Newt

Recent translations of GCN have cleared the species from central areas within the site.

Two receptor sites have been created within the site.

Update surveys recorded GCN presence within ponds associated within the receptor areas.

No presence was recorded in adjacent waterbodies that were also subject to survey.



Other Survey Findings

- Grass Snake *Natrix helvetica* are present and closely associated with wetland habitat including the reed bed to the north.
- Badgers remain active within the site, with setts present in association with railway spur.
- The habitats onsite continue to support a range of breeding bird species including Cetti's Warbler *Cettia cetti* and Marsh Harrier *Circus aeruginosus*.
- Invertebrate surveys have identified notable species within the site, typically associated with ephemeral habitat, reed bed and ditches to the north and orchards in the east.

Next Steps

- Ecology survey findings to feed into concept development
- Biodiversity a key asset as part of the Gravity natural landscape setting
- LDO ES processes
- Ecological mitigation and management during construction and implementation
- Opportunities for biodiversity enhancement.

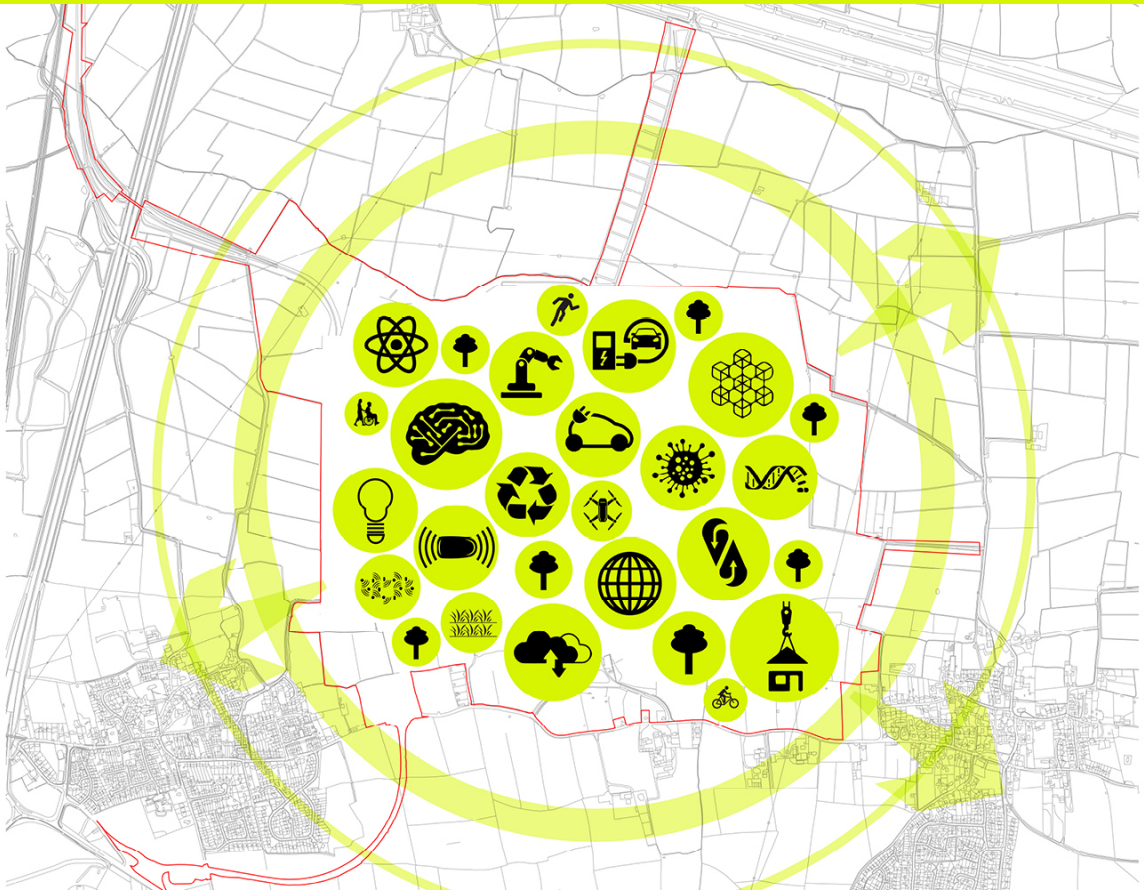
Gravity

Emerging Spatial Principles

- A beacon for clean and inclusive growth and innovation
- Plot flexibility in the right places to attract inward investment
- A well connected place with an efficient movement network
- Gravity Orbit
- 24 hour campus

Gravity

A beacon for clean and inclusive growth and innovation

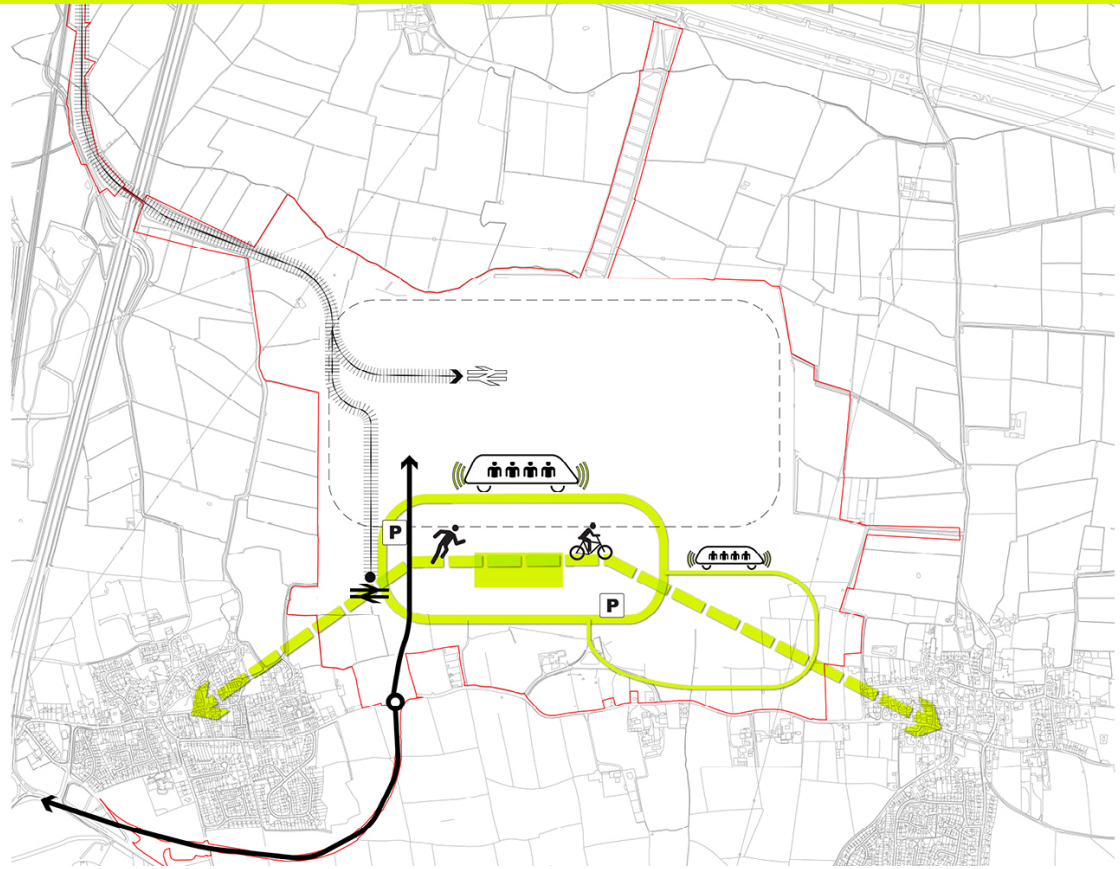


Gravity

Plot flexibility in the right places to attract inward investment

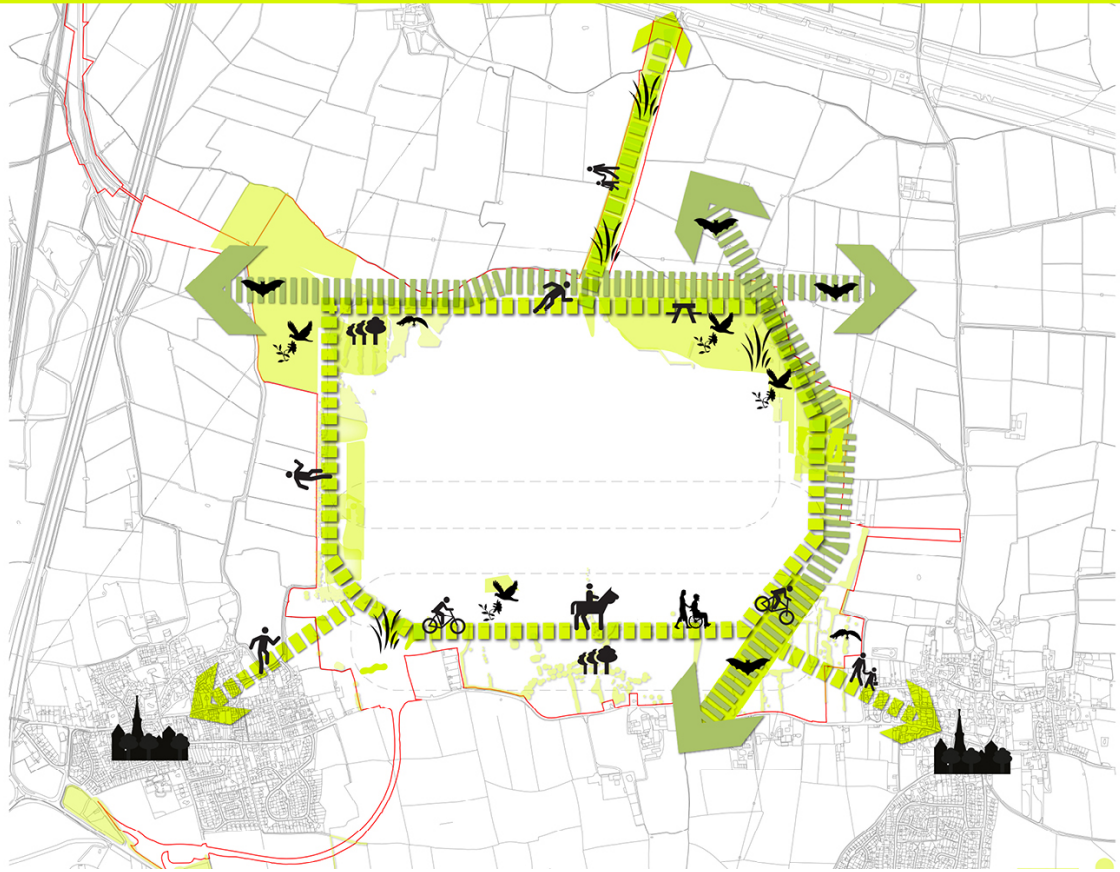
Gravity

A well connected place with an efficient movement network



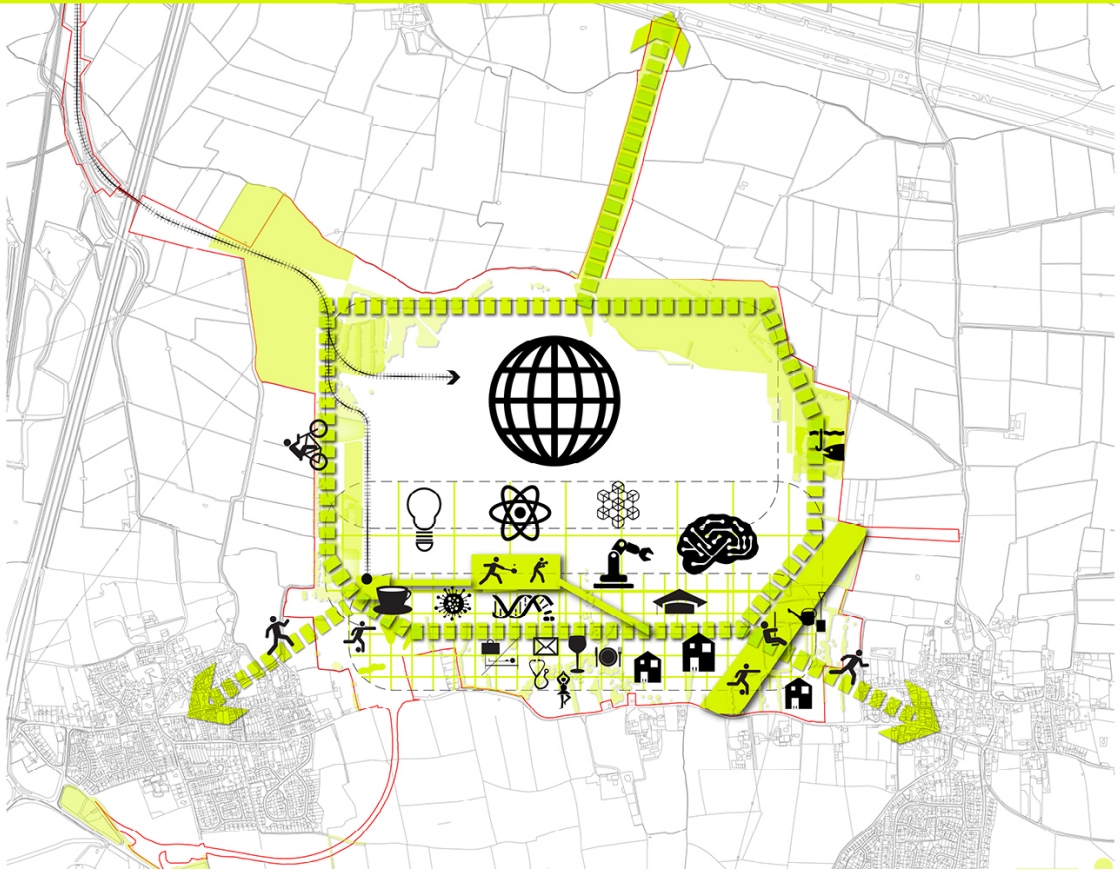
Gravity

Gravity Orbit- A multifunctional ecology and leisure loop



Gravity

24 hour campus-a place for work, leisure and community



Gravity

EIA Assessment Scenarios

- Baseline
- Full LDO Development (Construction)
- Full LDO Development (Operation)
- Comparison with Extant Permission
- Cumulative Assessment

Gravity

EIA Programme

Item	Date
Baseline data collection	Ongoing – March 2021
Preparation of screening note Preparation of EIA Scoping Report	January/February 2021
EIA Scoping Report submission to SDC	End February 2021
Consultation on EIA Scoping Report	March to early April 2021 (5 weeks)
Completion of Scoping Report and Adoption of Report as the EIA Scoping Opinion	By end April 2021
Parameter Plan Fix	By end April 2021
Preparation of ES	May – July 2021
Completion of ES	Early August 2021

Gravity

Next Steps

- Delivery Group Meeting Four: 23 February 2.30 – 4.30

- Concept Plans
- Legal advice on consenting strategy – rail and EA
- 5G Create/ freeport bid/ rail
- Transport sub - group update
- Utilities and infrastructure update
- Update from Social on community engagement