

Cover Letter

Please read the cover letter and choose if you would like to participate in the study.

You are invited to participate in the second phase of a study entitled “Validating an Abstraction Hierarchy for City Scale Resilience”. The study is being conducted by Kerri McClymont (PhD Researcher) from Heriot-Watt University as part of the EPSRC EP.NE30419/1 project ‘Water Resilient Cities: Climate Uncertainty & Urban Vulnerability to Hydro-hazards’.

The purpose of this study is to seek subject matter expert knowledge and insights to inform the development of an abstraction hierarchy applied to a city. The abstraction hierarchy aims to explore the complex web of social and technical interactions and how they combine to affect critical system functionalities. Abstraction in this context means the qualities of objects which are considered separate from the objects themselves.

[Placement for figure to explain abstraction hierarchy]

This questionnaire is the second round of the study which allows participants to **review the feedback from the previous questionnaire and decide whether they agree with the inclusion of new nodes**. The average time required to complete this study in the pilot round was around 45 minutes.

This survey does not ask you to reveal any personally identifying information. A limited number of research team members will have access to the data during data collection. Identification numbers will be kept during the data collection phase for tracking purposes only. This information will be stripped from the final dataset.

Your participating in this study is voluntary and you may withdraw your consent at any time. This study has been approved by the Ethics Committee at Heriot Watt University. If you have any questions, please contact Kerri McClymont at km39@hw.ac.uk.

Instructions

The abstraction hierarchy will be used to assess the impact of a hydro-hazard on critical system functionalities with the aim of improving city resilience. The abstraction hierarchy focuses on the city limits, and therefore processes in the hinterland which contribute to city functioning are out with the scope of this study. The aim of this survey is to determine consensus on the nodes which should be included in each layer of the abstraction hierarchy in order to model a city. In other words: **what does a city include?** And is anything missing from this list?

This survey includes five sections, and each section has two parts. The first part will show your previous answer against the group consensus – you may change this if you wish. It will also include **any adjustments made to the existing nodes and you are asked to state whether you agree or disagree with this feedback**. The second part asks you to **state whether you agree or disagree with the inclusion of new nodes**. Space has been provided at the end of each section for any additional comments. Responses from this questionnaire will be collated to create the final abstraction hierarchy.

Thank you for taking the time to participate in this study.

TIER OF HIERARCHY	EXPLANATION	EXAMPLE
FUNCTIONAL PURPOSE (TIER 1)	Why the city system exists	Shared community resources
VALUES AND PRIORITY MEASURES (TIER 2)	Criteria to measure whether a city is meeting its Functional Purpose	Effective safeguards to human health and life
GENERALISED FUNCTIONS (TIER 3)	What can be accomplished by using the Object-related Processes in order to contribute to the Values and Priority Measures	Provide emergency services
OBJECT-RELATED PROCESSES (TIER 4)	Explains what each component can afford	Enable transport
PHYSICAL OBJECTS (TIER 5)	Physical description of the city system	Roads

Section One: Physical Objects (Tier 5)

Tier 5 includes a physical description of a general city system. A 'physical object' can be a type of infrastructure, people, buildings, facilities etc. Items have been grouped into categories depending on their affordance (similar Object-Related Processes).

Part a) Adjustments from previous round

Below are the results from the previous questionnaire. **Please review the responses, you may change your previous answer if you wish***. The shaded boxes include feedback around certain nodes. Please state whether you agree or disagree with the highlighted statements. Nodes in italics have different nomenclature from the previous round due to feedback.

*Note that 'Your Answer' has been set to Agree for all nodes in this copy of the questionnaire.

Category	Physical Object	Group Answer Agree (%)	Your Answer
Public	People	84	Agree
	Abstraction hierarchy should be seen as actor independent so shouldn't have 'People' included.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Accommodation	Assisted Living	100	Agree
	Estate/Letting Agencies	79	Agree
	Hotels (with Restaurant/Meals)	100	Agree
	Hotels (Self-Catering)	100	Agree
	Private Accommodation	95	Agree
	Separate 'Private accommodation' into 'Privately owned residential accommodation' and 'Council/state owned residential accommodation'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Education & Professional Services	Homeless Shelters/Hostels	100	Agree
	Creches	95	Agree
	Job Centres	100	Agree
	Driving Schools	89	Agree
	Music Services	79	Agree
	Change 'Music services' to 'Music schools & lessons'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Schools	100	Agree
	Training/Continued Learning Centres	95	Agree
Finance	Further Education (University, Colleges)	100	Agree
	Accountancy Firms	100	Agree
	ATMs	100	Agree
	Banks	100	Agree
	Credit Unions	100	Agree
	Bureau de change	89	Agree
	Debt Collection Companies	89	Agree
	Insurance Providers	100	Agree
	Investment/Financial Advisors	100	Agree
	Money Transfer Services	89	Agree
	Remove 'Money transfer services' because this is part of 'Banks'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Food & Drink	Pawn Shops	79	Agree
	Bars/Nightclubs	100	Agree

	Eateries	100	Agree
	Food Markets Separate 'Food markets' into 'Corner stores'; 'Farmers markets'; 'Bakeries'; 'Butchers'; 'Cafes & coffee shops'; 'Confectioners'; 'Ice cream shops'; 'Fishmongers'; 'Greengrocers'; and 'Supermarkets'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
Government	Armed Forces Separate 'Armed Forces' into 'Armed forces administrative buildings'; 'Armed forces barracks'; 'Armed forces recruitment offices'; and 'Armed forces training grounds'.	84 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Council Offices	100	Agree
	Courthouses	100	Agree
	Fire Departments	100	Agree
	Libraries/Archives	100	Agree
	Parliamentary Buildings	100	Agree
	Police Departments	95	Agree
	Politician Offices Separate 'Politician offices' to 'Politician and campaign offices (not elected yet) and 'Politician offices (individual elected)'.	89 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Public Prosecutor	79	Agree
	Registrar Service Offices	95	Agree
	Social Work Offices	100	Agree
Healthcare	GP/Doctors' Surgery	100	Agree
	Hospitals Separate 'Hospitals' to 'General hospital facilities' and 'ICU/A&E'.	100 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Healthcare (Other) Separate 'Healthcare (other) into 'Dentists & orthodontists'; 'Defibrillators'; 'Opticians & ophthalmologists'; 'Podiatrists'; 'Physiotherapy & massage services'; 'Chiropractors'; 'Mental health & counselling services'; and 'Healthcare outreach & outpatient services'; and 'Healthcare (alternative)'.	84 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Pharmacies	100	Agree
Industry	Construction & Heavy Industry	89	Agree
	Farms	89	Agree
	Tradesmen Businesses Separate 'Tradesman business' into 'Blacksmiths'; 'Carpenters & Joiners'; 'Cobblers & Locksmiths'; 'Electricians'; 'Glaziers'; Home removal services'; 'HVAC installers'; 'Painter & Decorators'; 'Plumbers'; 'Roofers' and 'Surveyors'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Lawyers/Solicitors	100	Agree
	Media Outlets Separate 'Media outlets' into 'Radio stations' and 'TV & film studios'.	89 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Security Services	100	Agree
	Industry (Other)	89	Agree
	Telephone Exchanges	84	Agree
	Network Access Points Change 'Network Access Points' to 'Broadband network access points'.	74 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>

	Derelict Land Change 'Derelict land' to 'Brownfield sites' under <i>Ecosystems</i> category.	68 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
Infrastructure	Broadband Providers	100	Agree
	Electricity Providers Separate 'Electricity providers' into 'Electricity provider offices'; 'Power plants/stations'; 'Power lines'; 'Power poles & towers' and 'Electricity switching points'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Gas Providers Separate 'Gas providers' into 'Gas compressor/pumping stations'; 'Gas pipelines'; 'Gas storage tanks'; 'Gas terminals' and 'Gas provider offices'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Waste Collection Separate 'Waste collection services' into 'Waste collection service offices'; 'Waste sorting centres'; and 'Recycling centres'.	89 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Wastewater Treatment Works	95	Agree
	Water Pumping Stations	100	Agree
	Reservoirs Remove 'Reservoirs' and include under 'Water storage'.	84 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Structural defence	100	Agree
	Water Storage	100	Agree
	Water Distribution Network Separate 'Water distribution network' into 'Aqueducts and viaducts'; 'Clean water pipes'; 'Public drinking fountain'; 'Water treatment works'; and 'Wells'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
Cultural, Leisure, Recreation and Tourism	Community Centres	100	Agree
	Gyms	95	Agree
	Attractions (Includes museums, concert halls, cinemas) Change 'Attractions' to 'Leisure/recreational attractions' which would include arcades, bowling alleys, escape rooms etc.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Pet Goods & Services	95	Agree
	Shops (Clothing) Separate 'Shops (Clothing)' into 'Clothing & shoe shops'; 'Department stores'; 'Dry cleaners & laundrettes'; 'Shopping centres' and 'Tailors'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Shops (Home & Garden) Separate 'Shops (Home & Garden)' into 'DIY shops'; 'Furniture & homeware shops'; 'Framers'; 'Garden centres'; and 'Storage facilities'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Shops (Non-Essential) Separate 'Shops (non-essential)' to include 'Antique shops'; 'Arts & crafts shops'; 'Beauticians'; 'Bicycle shops'; Book shops'; 'Charity shops'; 'Computer/Electronic shops'; 'Erotic shops'; 'Fabric shops'; 'Florists'; 'Gift/Souvenir shops'; 'Jewellery & accessory shops'; 'Music shops & services'; 'Hairdressers'; 'Party supply & stationary shops'; 'Phone shops'; Photographers studios'; 'Photography supply stores'; 'Print or copy stores'; 'Tobacco stores'; 'Off-licenses'; 'Sports & outdoor shops'; 'Tattoo studios' and 'Toy shops'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>

	Sports Grounds & Facilities	95	Agree
<i>Religion & Major Life Events</i>	Cemeteries	95	Agree
	Funeral Directors	100	Agree
	Religious Buildings	100	Agree
	Religious Buildings	100	Agree
<i>Social Support</i>	Business Advice/Support Organisations	100	Agree
	Charity Organisations	100	Agree
	Citizens Advice Bureau	100	Agree
	Day Centres	95	Agree
	Employment Services	89	Agree
	Remove 'Employment services' as this is a duplicate of 'Job centres'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Food Banks	100	Agree
	Food Banks	100	Agree
<i>Transport & Logistics</i>	Airports	89	Agree
	Bus Stations	100	Agree
	Couriers	100	Agree
	Bicycle Parking Points	100	Agree
	Distribution Centres	95	Agree
	Petrol Stations	95	Agree
	Rail Stations	100	Agree
	Railway Lines	100	Agree
	Post Offices	100	Agree
	Separate 'Post offices' to 'Postal boxes'; 'Post offices'; and 'Post depots & sorting offices'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Roads	100	Agree
	Vehicle Dealerships	95	Agree
	Vehicle Repair Services	100	Agree
	Cycle/pedestrian paths	95	Agree
	Separate 'Cycle & pedestrian paths' to 'Cycle paths' and 'Pedestrian paths'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
<i>Ecosystems</i>	Parks	100	Agree
	Urban Forests	100	Agree
	Rivers/Canals/Streams	95	Agree
	Separate 'Canals' from 'Rivers/streams' because of their transport/logistics affordance.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Storm Water Retention Ponds	84	Agree
	Change 'Storm water retention ponds' to 'Water detention basin'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>

Part b) New suggested nodes to include

Below are the suggested new nodes to include in the Physical Objects Tier. **Please review and state whether you agree or disagree with their inclusion.**

Category	Physical Object Feedback	Agree	Disagree
<i>Education & Professional Services</i>	Include 'Art studios'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Cooking schools'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Dance halls and studios'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Language schools'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Special educational needs schools'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Private tuition centres'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Nursery'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Finance</i>	Include 'Bank administrative offices/headquarters'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Food & Drink</i>	Include 'Takeaways & fast food'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Government</i>	Include 'Prison and jails'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Embassies and diplomatic buildings'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Fire hydrants'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Lifeboat stations'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Healthcare</i>	Include 'Pathology labs'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Blood donor services'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Industry</i>	Include 'Advertising & graphic design agencies'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Architects & urban planners'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Data centres'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Factories & manufacturing plants'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Publishing offices'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Research & development organisations'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Travel agencies'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Commercial (other)'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Types of infrastructure</i>	Include 'Bins (general waste)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Bins (recycling)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Mobile phones'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Cell site/tower'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Coworking office spaces'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'DC power converter stations'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Emergency telephones'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'ICT cables'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Landfills & endpoint waste sites'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Public telephones'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Public toilets'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Satellites'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Street lights'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Small scale renewables'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'District heating'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Cultural, Leisure,</i>	Include 'Cinemas'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Adult entertainment venues'.	<input type="checkbox"/>	<input type="checkbox"/>

<i>Recreation & Tourism</i>	Include 'Botanical gardens'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Castles and fortifications'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Gambling venues'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Historic points of interest'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Horse riding centres'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Museums & art galleries'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Music & theatre venues'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Piers & boardwalks'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Playgrounds (outdoor)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Public art installations & street art'.	<input type="checkbox"/>	<input type="checkbox"/>
	Change 'Gyms' to 'Gyms & sports facilities (indoor)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sports pitches & facilities (outdoor)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Animal shelters'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Benches'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Public fitness stations'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Public information boards'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Public picnic tables'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Veterinarians'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Town squares'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Social support</i>	Include 'Union offices'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Transport & Logistics</i>	Include 'Air traffic guidance lights'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Tram network'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Electric charging stations'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Traffic control centres' e.g. ATC.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Traffic lights/signage'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Barriers, gates, and fences'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Bicycles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Bicycle rental points'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Bicycle traffic monitoring & display'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Bridges'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Buses'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Bus stops'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Car parks'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Crossings'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Helipads'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Lorries'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Maintenance vehicles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Marinas, boatyards & ferry terminals'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Private motor vehicles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Rail signalling and switches'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Rail yards'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Road intersections'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Traffic calming measures'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Subway stations'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Taxi ranks'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Toll booths'.	<input type="checkbox"/>	<input type="checkbox"/>

	Include 'Trains'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Tunnels'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Vehicle rental'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Ecosystems</i>	Include 'Wetlands'	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Street trees'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Residential gardens'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Grass verges'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Wildlife'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Absorption towers'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Common green areas & gardens'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Lakes and ponds'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Meadows'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Nature reserves'.	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments:

Section Two: Object-Related Processes (Tier 4)

The Object-Related Processes capture the affordance of the Physical Objects within a city system. Think about the Physical Objects listed previously, what functions do they do or afford?

Part a) Adjustments from previous round

Below are the results from the previous questionnaire. **Please review the responses, you may change your previous answer if you wish*. The shaded boxes include feedback around certain nodes. Please state whether you agree or disagree with the highlighted statements.** Nodes in italics have different nomenclature from the previous round due to feedback.

*Note that 'Your Answer' has been set to Agree for all nodes in this copy of the questionnaire.

**Note the Object-Related Processes have been grouped into the same categories as above for ease of completion, but some may have more than one function that is listed under another category.

Category	Object-Related Process	Agree (%)	Your Answer
Accommodation	Act as main base of living	100	Agree
	Change 'Act as a main base of living' to 'Provides a psychological sense of home' and 'Secure place to keep your possessions'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Provide temporary or permanent shelter/protection from weather/events	95	Agree
	Provide assisted living (for elderly, disabled)	100	Agree
Education & Professional Services	Provide education services	100	Agree
	Provide professional/other qualification services	100	Agree
	Provide employment	100	Agree
	Provide youth/older childcare	100	Agree
	Undertake research	100	Agree
Finance	Provide access to cash	100	Agree
	<i>Grant loans/credits</i>	100	Agree
	Provide other financial services/advice (e.g. mortgages, business)	100	Agree
	<i>Make payments/transfer money</i>	100	Agree
	Provide access to consumer advice	95	Agree
Food & Drink	Provide food	95	Agree
	Change 'Provide food' to 'Act as access point for food'; 'Place to eat'; and 'Grow or produce food (provisioning)'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Provide drink	100	Agree
Government	<i>Criminal investigation</i>	95	Agree
	Undertake legal action and proceedings	95	Agree
	Provide information on crime prevention	95	Agree
	Facilitate and increase employment	100	Agree
	Provide general legal advice	95	Agree
	Facilitate and process subsidence grants and/or benefits	95	Agree
	Facilitate & process taxes (Council/income/business)	95	Agree
	<i>Property management & development</i>	100	Agree
	Facilitate traveller sites	84	Agree
	Remove 'Facilitate traveller sites' because it is unclear which PO would specifically manage this, and how this	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>

	differs from managing any other residential communities.		
	Facilitate and process early childcare	89	Agree
	Remove 'Facilitate and process early childcare' as this may be duplicated in the <i>Education</i> category.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Facilitate & process community project grants	95	Agree
	Improve road conditions and safety	95	Agree
	Provide information on local resources (library services, archives, family history resources)	95	Agree
	Provide information on local conservation areas	100	Agree
	Facilitate waste collection and recycling	95	Agree
	Separate 'Facilitate waste collection and recycling' into 'Collect waste and recycling'; 'Facilitate waste and recycling sorting'; and 'Facilitate waste disposal and reuse'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Provide access to planning resources (guidance on process, existing local development plans, past building warrants/completion certificates/plans/specifications, current regulations)	100	Agree
	Provide street care (lighting, cleaning, dog fouling, stray dogs)	95	Agree
	Separate 'Street care' into 'Street care'; 'Animal rescue'; and 'Investigate fly-tipping'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Provide information on local road issues	100	Agree
	Provide information on listed building and applications for consent	95	Agree
	Remove 'Provide information on listed buildings' as this is included in 'Provide access to planning resources'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Enforce building standards	95	Agree
	Enforce food standards (cleanliness, food labelling, food hygiene etc)	100	Agree
<i>Healthcare</i>	Respond to medical emergencies	95	Agree
	Provide healthcare services	100	Agree
	<i>Provide rehabilitation services</i>	95	Agree
	Provide medicines	100	Agree
<i>Industry</i>	Maintain/repair homes/shelter	100	Agree
	Keep roads in adequate condition (roadworks/gritting/etc.)	84	Agree
	Remove 'Keep roads in adequate condition' as this is duplicated in <i>Government category</i> under 'Improve road conditions'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Produce goods	84	Agree
	Remove 'Produce goods' in lieu of more specific goods and services (new nodes list)	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Environmental protection	84	Agree
	Remove 'Environmental protection' as it doesn't connect to any of the PO in this category and is too abstract for the ORP.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
<i>Infrastructure</i>	Environmental monitoring	100	Agree
	Transmit & receive communications	100	Agree
	Store & distribute fuel & energy	95	Agree

	Separate 'Store & distribute fuel & energy' into 'Convert or manage energy'; 'Route energy'; 'Store energy'; 'Support overhead power lines' and 'Transmit or distribute energy'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Provide clean water Separate 'Provide clean water' into 'Act as access point for potable water'; 'Store potable water'; and 'Transport potable water'.	89 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Manage & dispose of sewage/wastewater Separate 'Manage & dispose of sewage/wastewater' into 'Act as point for public access to sanitation'; 'Transport sewage/wastewater'; and 'Treat sewage/wastewater'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Provide drainage	100	Agree
<i>Cultural, Leisure, Recreation & Tourism</i>	<i>Facilitate leisure/recreation</i>	100	Agree
	Provide luxury/recreational/non-essential goods and services	89	Agree
	Remove 'Provide luxury/recreational/non-essential goods/services' into more specific ORP (new nodes list).	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Act as community/meeting space	100	Agree
	Support health/fitness	100	Agree
	Provide/maintain clothing Separate 'Provide or maintain clothing' into 'Maintain clothing' and 'Sells clothing'.	84 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Act as place of historical/cultural importance	95	Agree
<i>Religion & Major Life Events</i>	Provide place of worship	100	Agree
	Facilitate use of/provide information on cemeteries, crematoriums, & memorial options	89	Agree
	Provide death-related services Remove 'Provide death-related service' as this is a duplicate of 'Facilitate use of/provide information on cemeteries, crematoriums, & memorial options'.	95 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Facilitate registrar services	100	Agree
<i>Social Support</i>	Provide help/support for vulnerable people/groups	95	Agree
	Assess risk level/needs of vulnerable people	95	Agree
	Provide domestic violence advice/support	95	Agree
	Remove 'Assess risk level/needs of vulnerable' and 'Provide domestic violence advice/support' and include within 'Provide help/support for vulnerable'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Advise & support carers	95	Agree
	Advise on relevant community activities	100	Agree
<i>Transport & Logistics</i>	Enable transport Remove 'Enable transport' into more specific ORP (new nodes list).	100 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>
	Maintain/repair vehicles	95	Agree
<i>Ecosystems</i>	Support microclimate regulation (reduce urban heat effect)	100	Agree
	Support air filtration	100	Agree
	Support natural hazard regulation Remove 'Provides natural hazard regulation' as this is too abstract for Object-related process and include as a Generalised Function.	89 Agree with statement <input type="checkbox"/>	Agree Disagree with statement <input type="checkbox"/>

	<i>Support water purification</i>	95	Agree
	<i>Manage pests</i>	89	Agree
	<i>Support nutrient cycles</i>	89	Agree
	<i>Support sources of energy</i>	100	Agree
	Fertilise soil	84	Agree
	Remove 'Fertilise soil' as this is included in 'Support nutrient cycles'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
	Provide aesthetic value	95	Agree
	<i>Support species habitat</i>	100	Agree

Part b) New suggested nodes to include

Below are the suggested new nodes to include in the Object-Related Purposes Tier. **Please review and state whether you agree or disagree with their inclusion.**

Category	Object-Related Processes Feedback	Agree	Disagree
<i>Education & Professional Services</i>	Include 'Provide recreational learning' which would be afforded by continued learning, languages, music classes etc.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides customised tutoring'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Teaches language skills'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Teaches specialised skills for disabled people'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Finance</i>	Include 'Administrates banking operations'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Food & Drink</i>	Include 'Create baked goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Creates sweet treats'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Processes animal meat'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include "Processes seafood".	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells baked goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells animal meat'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells coffee, tea, other drinks'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells fruit & vegetables'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells seafood'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells sweat treats'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Government</i>	Include 'Acts as point of contact for public to raise civic issues'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Acts as training grounds for armed forces exercises'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrates armed forces operations'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrates diplomatic efforts'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrates political campaigns'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrates political duties'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Houses criminals'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Houses lifeboats'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Improve road conditions & safety'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Punishes criminals'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide national security/defence' which would be afforded by the PO of 'Armed forces'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide cyber security' which would be afforded by security services and/or government work.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Support social cohesion'.	<input type="checkbox"/>	<input type="checkbox"/>

	Include 'Fostering stronger communities'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Tackle inequalities'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Healthcare</i>	Include 'Ensures transport to and from healthcare services.'	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides alternative medicine options'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides dental healthcare'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide mental healthcare services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides shock to resuscitate person under cardiac arrest'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide specialist care for feet and limb health'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides specialist musculoskeletal healthcare'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide specialist optical healthcare'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Industry</i>	Include 'Facilitate the creation of legally binding contracts' which would be afforded by lawyers.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Mediate disputes' which would be afforded by lawyers.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Act as concentrated facility for computing and networking equipment'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Coordinate construction work'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Cut keys'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Design buildings & urban spaces'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Does metalwork'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Installs climate control facilities (e.g. heating)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Installs lock systems'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Installs plumbing'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Installs windows / performs glass-related construction'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Manufacture goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Moves belongings between residences'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Organise travel or holidays'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Perform electrical work'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Performs painting and finishing of homes'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Performs roof construction'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Perform wooden construction'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides marketing and media services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide or run public communications service (e.g. news, weather events)'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Conducts property surveys'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Infrastructure</i>	Include 'Act as grid point in cellular communications network'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Act as point for personal access for communications'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrate provision of broadband'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrate provision of gas'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Administrate provision of power'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Collect waste'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Generate energy / fuel'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Link up to/enable individual connection to gas networks'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Link up to/enable private connection to broadband networks'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Manage local watercourses'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide lighting'.	<input type="checkbox"/>	<input type="checkbox"/>

	Include 'Provides working environment'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Route communications'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sort waste'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Store sewage/wastewater'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Store waste'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Transport waste'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Cultural, Leisure, Recreation & Tourism</i>	Include 'Facilitates cultural performances'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Cuts & styles hair'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Display items of artistic, cultural, or scientific significance'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Frames artwork, photography etc.'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Houses animals'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Preserves and catalogues ecological samples'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides adult entertainment'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides animal healthcare'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides beauty services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides outdoor seating'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides photography services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide printing and copying services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide tattoo and piercing services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Screens films'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells books'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells cigarettes, e-cigarettes, or other smoking paraphernalia'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells computers and personal electronics'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells erotic goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells fabric'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells flowers'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells furniture/home décor'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells gardening equipment'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells gifts'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells jewellery and accessories'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells mobile contracts, phones, and accessories'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells musical goods and services'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells party supplies, stationary, etc.'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells pets'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells photography equipment'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells souvenirs'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells sporting and outdoor goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells supplies for arts, crafts, and hobbies'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells tools and hardware'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells toys'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells vehicles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Stores goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sells alcohol'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides places to relax'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides places to read'.	<input type="checkbox"/>	<input type="checkbox"/>

<i>Social support</i>	Include 'Monitor neighbourhood'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Advise on employment issues'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Transport & logistics</i>	Include 'Act as infrastructure/means/mode for transport'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Act as transport hub'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Allow pedestrians to cross road'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Charges electric vehicles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Collect road user fare for road construction'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Deters speeding'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Direct / guide traffic'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Documents speeding drivers to be fined'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Manage or route transport'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Prevent movement of person, animal, or vehicle into a restricted area'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provide customer-end services for goods distribution'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides traffic information'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Provides way through mountain, underground, etc.'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Rent vehicles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sort and organise delivery of goods'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Store vehicles'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Support recreational activities'.	<input type="checkbox"/>	<input type="checkbox"/>
<i>Ecosystems</i>	Include 'Space for recreation'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Benefit mental and physical health and wellbeing'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Support excess water storage'.	<input type="checkbox"/>	<input type="checkbox"/>
	Include 'Sequesters carbon (regulating)'.	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments:

Section Three: Generalised Functions (Tier 3)

This layer links the physical description of system components at the bottom of the hierarchy to the more abstract functional description of what the system should do at the top of the hierarchy. Desirable outcomes of dynamic interactions should be listed here, not material objects. What should be the key functions of a city? What functions coordinate the use of physical resources? What tasks are required or expected?

Part a) Adjustments from previous round

Below are the results from the previous questionnaire. **Please review the responses, you may change your previous answer if you wish*. The shaded boxes include feedback around certain nodes. Please state whether you agree or disagree with the highlighted statements.** Note that the language has been simplified from the previous round as a result of feedback.

**Note that 'Your Answer' has been set to Agree for all nodes in this copy of the questionnaire.*

Generalised Function	Agree (%)	Your answer
Public health	95	Agree
Law & order	100	Agree
Community activities & engagement	100	Agree
Food provision	95	Agree
Housing provision	100	Agree
Clothing provision	95	Agree
Financial services	100	Agree
Tourism	95	Agree
Planning activities	100	Agree
Travel (people, not goods)	100	Agree
Employment provision	100	Agree
Emergency services	100	Agree
Government regulation	100	Agree
Communications systems	100	Agree
Observance of religion	95	Agree
Distribution of goods (logistics)	100	Agree
Manage & dispose of waste	100	Agree
Energy supply	100	Agree
Clean water	100	Agree
Sanitation provision	100	Agree
Economic output	95	Agree
Change 'Economic output' to 'Goods and services provision'.	Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Historical/cultural protection	100	Agree
Natural environment protection	100	Agree
Learning & education	100	Agree
Ceremonies, services, etc. for major life events	95	Agree
Environmental assets conservation	100	Agree
Clean air	100	Agree
Physical security (personnel and property) provision	95	Agree

Part b) New suggested nodes to include

Below are the suggested new nodes to include in the Generalised Functions Tier. **Please review and state whether you agree or disagree with their inclusion.**

<i>Generalised Functions Feedback</i>	<i>Agree</i>	<i>Disagree</i>
Include 'Recreational activities'.	<input type="checkbox"/>	<input type="checkbox"/>
Include 'Social and economic equality'.	<input type="checkbox"/>	<input type="checkbox"/>
Include 'Social cohesion'.	<input type="checkbox"/>	<input type="checkbox"/>
Include 'Mental wellbeing'.	<input type="checkbox"/>	<input type="checkbox"/>
Include 'Wildlife protection'.	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments

Section Four: Values & Priority Measures (Tier 2)

Values and Priority Measures consist of criteria that can measure the extent to which a city is meeting its Functional Purpose. The criteria should be defined in terms that can be measured. *What are the measures of a successful city?* These are based on the 12 goals of the 100 resilient cities framework¹.

Part a) Adjustments from previous round

Please review the feedback. You may change your previous answer if you wish*. 'Measurement' has been used as opposed to 'definition' as a result of feedback.

**Note that 'Your Answer' has been set to Agree for all nodes in this copy of the questionnaire.*

Value and Priority Measure	Measurement	Agree (%)	Your answer
Minimal human vulnerability	Indicated by housing; energy supply; drinking water; sanitation; food supply.	95	Agree
Diverse livelihoods and employment	Indicated by labour policies; skills and training; business development and innovation; financing mechanisms; protection of livelihoods.	95	Agree
Effective safeguards to human health and life	Indicated by public health systems; quality healthcare; medical care; emergency response	95	Agree
Collective identity and community support	Indicated by community support, community cohesion, identity and culture, engaged citizens	95	Agree
Comprehensive security & rule of law	Indicated by systems to deter crime; corruption prevention; policing; criminal and civil justice.	100	Agree
Sustainable economy	Indicated by public finances; business continuity plans; integration with regional and global economies.	100	Agree
Reduced exposure and fragility	Indicated by hazard exposure and mapping; codes, standards and enforcement; protective ecosystems; protective infrastructure.	95	Agree
Effective provision of critical services	Indicated by stewardship of ecosystems; infrastructure services spare capacity; maintenance; continuity for critical assets and services.	95	Agree
Reliable communications and mobility	Indicated by transport networks; transport operations and maintenance; communications and technology; technology networks.	100	Agree
Effective leadership and management	Indicated by government decision-making; co-ordination with other government bodies; multi-stakeholder collaboration hazard monitoring and risk assessment; emergency management.	100	Agree
Empowered stakeholders	Indicated by education for all; community awareness and preparedness; Mechanisms for communities to engage with government.	95	Agree
Integrated development & management	Indicated by city monitoring and data management; planning process; land use and zoning; planning and approval process.	95	Agree

¹ Arup (2015) 'City Resilience Framework'. Available at: <https://www.rockefellerfoundation.org/report/city-resilience-framework/>.

Part b) New suggested nodes to include

Below are the suggested new nodes to include in the Values and Priority Measures Tier. **Please review and state whether you agree or disagree with their inclusion.**

<i>Values and Priority Measure Feedback</i>	<i>Agree</i>	<i>Disagree</i>
Include 'Environmental sustainability' which would be indicated by improving air quality, reducing greenhouse gas emissions and adapting locally for the impacts of global climate change.	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments:

Section Five: Functional Purpose (Tier 1)

Functional Purposes capture the overall purpose of the system and should be independent of any particular activity. What is the ultimate purpose that a city serves?

Part a) Adjustments from previous round

Below are the results from the previous questionnaire. **Please review the responses, you may change your previous answer if you wish*. The shaded boxes include feedback around certain nodes. Please state whether you agree or disagree with the highlighted statements.**

*Note that 'Your Answer' has been set to Agree for all nodes in this copy of the questionnaire.

Functional Purpose	Definition	Agree (%)	Your answer
Economic opportunity	This includes economic security and diversity of jobs as well as trade, investment, job creation and economic growth.	95	Agree
Change 'Economic opportunity' to 'Economic growth'.		Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Cultural heritage & sense of Place	Cities should provide a 'sense of place' which is defined as the degree of meaning people ascribe to a particular location. Cities strive to have a strong identity which is deeply felt by its inhabitants and visitors.	95	Agree
Urban ecosystem services	Direct and indirect contributions of ecosystems to human well-being. It includes all green and blue spaces within an urban area which generate a habitat that deliver services to city inhabitants. These services include climate change mitigation and adaptation, improved air quality, aesthetic values, reduced stress and improved social cohesion.	89	Agree
Remove 'Urban ecosystem services' as it sounds more like a high-level category of objects and their affordances, rather than a purpose of a city. It is more a Generalised Function than a functional purpose.		Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Shared community resources	These are collectively built at a lower cost to the individual (economies of scale). Includes payment of public services, emergency response, rule of law etc.	95	Agree
Change 'Shared community resources' to 'Pooling of resources' which would also include utilities.		Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>
Freedom of movement & expression	This includes ideas, communications, people and goods, as well as the degree of anonymity which enables people to freely choose who to associate with and express themselves.	74	Agree
Remove 'Freedom of movement' as this is a means to an end, rather than the purpose of a city. Moreover, cities do not exist because of freedom of movement and expression, although they may make them more or less desirable than others.		Agree with statement <input type="checkbox"/>	Disagree with statement <input type="checkbox"/>

Social opportunity	Cities provide higher quantities and diversity of people, which drives knowledge, innovation and social relations.	89	Agree
Globalised connectivity	This includes global connectivity with travel and trade. It includes a city becoming an international player, but also building social relations on a larger scale and give a voice to local interest.	95	Agree
Physical settlement	Cities should provide adequate housing and accommodation which provides homes for people as well as driving tourism.	100	Agree

Part b) New suggested nodes to include

Below are the suggested new nodes to include in the Functional Purposes Tier. **Please review and state whether you agree or disagree with their inclusion.**

<i>Functional Purpose Feedback</i>	<i>Agree</i>	<i>Disagree</i>
Include 'Safety and security' which can be created because of people gathering together and also the duty of care which local governance has responsibility for.	<input type="checkbox"/>	<input type="checkbox"/>
Include 'Welcoming places for ethnic groups' because of the positive role cities play in welcoming spaces for minority groups and for those who might otherwise be marginalised in smaller places.	<input type="checkbox"/>	<input type="checkbox"/>
Include 'Knowledge sharing and innovation'.	<input type="checkbox"/>	<input type="checkbox"/>

Additional comments:

Thank you for taking the time to complete this study
