Designing with Water

Design Guidance for Glasgow's River Corridor

FEBRUARY 2024

Contents

Introduction

The River Clyde Strategic Development Framework (SDF) sets out a transformational vision for the River Corridor in Glasgow as a liveable and well-connected place that successfully integrates placemaking with sustainable, flood-resilient design:

> *The River Corridor will be a world-class destination, with an accessible waterfront and attractive spaces where people want to spend time. It will be climate-resilient and support a mix of uses. New houses and flats will be linked to existing neighbourhoods. The historic character will be protected and enhanced, while innovative design will help create a distinct identity. It will form part of a wider network of urban waterways, will support continuous walking and cycling routes, and be celebrated as the city's largest, continuous open space.*

The Council's ambitions for the River Corridor place it at the scale of a major urban renewal project - balancing regeneration (and its wider social, environmental and economic benefits) with the complexities of flood management and climate change. Retreating from the river is not considered a proportionate response if the long-term objective is to create a liveable city, to support integration with existing neighbourhoods and to attract people to the waterfront.

The recently published Tidal Flooding on the Clyde Options Analysis and Scoping of Adaptation Pathways supports the principle of future development in the area covered by the SDF and the preparation of locally appropriate guidance to avoid poor long-term investment decisions. **Designing with Water | Design Guidance for Glasgow's River Corridor** should be considered as an early part of the adaptive pathways approach to help unlock vacant sites along the river, repair the urban fabric and ensure future development is able to 'resist and absorb' the impacts of sea level rise and tidal surge.

This document sets out a **Process** to guide developers/designers on the preparation of major planning applications and to co-ordinate input from teams across the Council including Development Management, Spatial Strategy, Building Standards and Flood Management. It also establishes the **Core Principles** that are considered essential to the delivery of an attractive waterfront and **Design Guidance** to encourage creative solutions rather than standard responses.

Designing with Water | Design Guidance for Glasgow's River Corridor should be read in conjunction with the policies and guidance below:

- Glasgow City Development Plan (particularly CDP1 The Placemaking Principle and CDP8 Water Environment)
- SG1 Placemaking Part 1, SG8 Water Environment & SG11 Sustainable Transport
- River Clyde Strategic Development Framework (SDF);
- Govan-Partick Strategic Development Framework (SDF)
- City Centre Strategic Development Framework (SDF)
- Updated SEPA Guidance (including guidance on elevated buildings)
- Glasgow Open Space Strategy
- NPF4
- Clyde Mission
- https://www.climatexchange.org.uk/
- https://www.clydeplan-sdpa.gov.uk/
- Glasgow Public Realm Design and Maintenance Guide
- Glasgow City Centre Strategy - District Regeneration Frameworks

Part A

Process

PART A | Process

This section sets out the process to be undertaken in preparing a proposal for development along the River Corridor with particular emphasis on placemaking, flood adaptation and relationship to the water. A design-led approach that capitalises on, and responds to, the river context (including flood risk) is promoted throughout.

Applicants are encouraged to engage with the Planning Service at an early stage while taking cognisance of the Core Principles and Guidance. This will involve agreeing the extent of pre-application discussions and any additional information to be submitted. The purpose is to ensure most of the work is front-loaded in the interest of making the overall process efficient and effective for all parties.

The process is broken down into the following stages:

- **Stage 1:** Establishing the Parameters
- **Stage 2**: Pre-Application
- **Stage 3:** Developing the Concept
- **Stage 4:** Testing and Refining
- **Stage 5:** Final Submission

Stage	Key Considerations	Key Principles and Policy Context
1. Establishing the Parameters	• Signpost relevant policies and guidance - including the latest policy position for Glasgow as set out in **Part B: Core Principles** • Agree extent of preliminary desktop studies, including the need for screening using the Tidal River Clyde Flood Model (see **Core Principle 3. Flood Risk Management**). • Identify pre-application consultation requirements • Promote early engagement with stakeholders • Discuss the option of entering into a Processing Agreement • Identify any additional information required, such as a Flood Resilient Design Strategy. • Establish the baseline situation using the Tidal River Clyde Flood Model and topographic survey i.e. the proportion of the site at risk of flooding and contribution that the site makes to flood storage capacity.	• River Clyde Strategic Development Framework (SDF); • **Designing with Water | Design Guidance for Glasgow's River Corridor - Part B: Core Principles and Guidance** • Glasgow City Development Plan (particularly CDP1 The Placemaking Principle and CDP8 Water Environment) • SG1 Placemaking Part 1 • SG8 Water Environment which provides information on Flood Risk Screening and Flood Risk Assessments • Updated SEPA Guidance • Glasgow Open Space Strategy • https://www.clydeplan-sdpa.gov.uk/ • Guidance and advice notes | Scottish Environment Protection Agency (SEPA)
2. Pre Application	• Engage in the pre-application process.	• Further information on the Council's pre-application advice service can be found on our website here.
3. Developing the Concept	At this stage, the applicant should demonstrate a thorough understanding of the site in terms of the most recent policy position, opportunities and constraints. This critical analysis should be translated into a clear placemaking approach based on tangible and measurable objectives which will provide a benchmark for any successive design iteration. This approach is set out in SG1: The Placemaking Principle Part 1 which states that all new developments in Glasgow should be primarily design-led and be informed by: • the nature of the site • the wider site context • the City's strategic aims, key policies and urban design objectives.	The updated **Tidal River Clyde Flood Model** represents the best available understanding of current and future flood risk from the tidal Clyde for fluvial (river flooding) events and coastal flooding, including storm surge events and sea level rise, to the year 2100 plus an allowance for climate change. Property flood resilience (PFR) measures include: • physical and management/operational measures for water resistance (i.e. preventing entry of water) • water resilience/recoverability (i.e. waterproof materials, elevated utilities, etc) • emergency flood plans (i.e. signing up to flood warnings, preparing a flood plan, identifying evacuation plans/routes, ensuring awareness of occupiers of property, etc) • Further guidance is available in CIRIA C790 – Code of Practice for Property Flood Resilience.

Stage	Key Considerations	Key Principles and Policy Context
4. **Testing and Refining**	This process is, by nature, iterative. The challenge of increased tidal flood risk can be addressed through sensitive design that aligns with the overarching principle of no net loss of floodplain storage, and gives consideration to land use vulnerability, water resilient construction and operational practices. Amendments to the design to address flood risk should demonstrate that key placemaking principles continue to be met. Steps include: • Testing against updated **Tidal River Clyde Flood Model** • Identifying measures that reduce flood risk through a place -based approach and nature-based solutions to create climate adaptive spaces • Quantifying the contribution that a site makes to capacity post-development, in order to establish scale of compensatory storage required • Re-testing against Flood Model • Re-assessment of risk/adaptation following design amendments.	Desktop Studies to be produced, including: • A Design and Access Statement demonstrating how the development is contributing to delivery of a River Park • Site and Context Appraisals • Urban Design Strategy • Technical requirements including Flood Risk Screening/ Assessments, EIA Screening etc • Where areas of the site are at risk of flooding or in a flood risk area, the developer will be required to produce a site plan demonstrating extent of flood risk using topographical survey data.
5. **Final submission**	• Finalisation of the design with appropriate flood adaptation strategies • Formal Pre Application Consultation (PAC) • Submission of Planning Application and supporting information.	For information on how to submit an application see our website here.

Part B

Core Principles and Design Guidance

This section sets out the **Core Principles** and **Design Guidance** to support development of sites along the River Corridor. The Council considers that a proportionate response to flood risk and appropriate design solutions can help address flooding constraints. On this basis, technical solutions to flood risk that do not contribute to our placemaking objectives are unlikely to be acceptable. The following six **Core Principles** and related **Design Guidance** support this approach. The **Principles** should not be considered in isolation - it is the interplay between them that will help achieve our vision for the River Corridor while also ensuring development is resilient and flood adaptive.

1. **Placemaking and Active Frontages**
2. **A River Park**
3. **Flood Risk Assessment and Surface Water Management**
4. **Land Use Vulnerability and Mix of Uses**
5. **Accessibility and Connectivity**
6. **Movement and Parking Strategy**

Core Principle 1. Placemaking and Active Frontages

The relationship between water and land, and the distinct townscape along the River Corridor, provides a strong framework for regeneration through an approach that successfully integrates placemaking with sustainable, flood-resilient design.

The River Clyde Strategic Development Framework (SDF) promotes a holistic, design-led approach to ensure new development enhances the unique character and identity of the River Corridor. More detailed River Room Placemaking Guidance focuses on opportunities to:

- Reconnect
- Repair and Densify
- Reinvent
- Reactivate
- Refine and Enhance
- Reconfigure.

The Glasgow City Development Plan provides comprehensive guidance on how to achieve high-quality placemaking and address flooding through the planning process.

Policy CDP1: The Placemaking Principle and SG1 Placemaking Part 1 set out the specific placemaking priorities for the City and for the River Corridor.

Image Credit Govan Housing Association

A. New development should demonstrate a commitment to the creation of an attractive, vibrant waterfront at every stage in the design process. Proposals should be distinctive - integrating contemporary, innovative architecture with the historic environment to reflect the identity of the River Corridor.

B. Building height, scale and massing should be appropriate to the location.

C. While tall buildings may be acceptable at some locations, a comprehensive assessment of the site and surrounding area should be undertaken to ensure development relates positively to its surroundings.

D. Large urban blocks should be avoided, and a finer urban grain established, to increase permeability through sites and to the river.

E. Development proposals should seek to limit the negative effect of blank walls and vacant undercrofts on the streetscape. Where elevated buildings are proposed, the agreed Council/SEPA guidance should be followed.

F. Street level facades should be activated with appropriate uses (such as retail, café, gallery etc) on ground floors to provide passive surveillance and create safe and welcoming spaces.

G. Main entrances and architectural detailing should also be located at street level.

H. Design solutions should ensure that ground floor uses are flexible and adaptable in the event of water ingress.

I. Creative solutions to river edge treatment can help improve interaction with the water. Nature – based solutions can help create adaptive spaces that provide multiple benefits, such as, active spaces for community, health and wellbeing, the environment and economy.

J. Consideration should be given to the distinct qualities of the river at each location, including reflection, water levels and flow.

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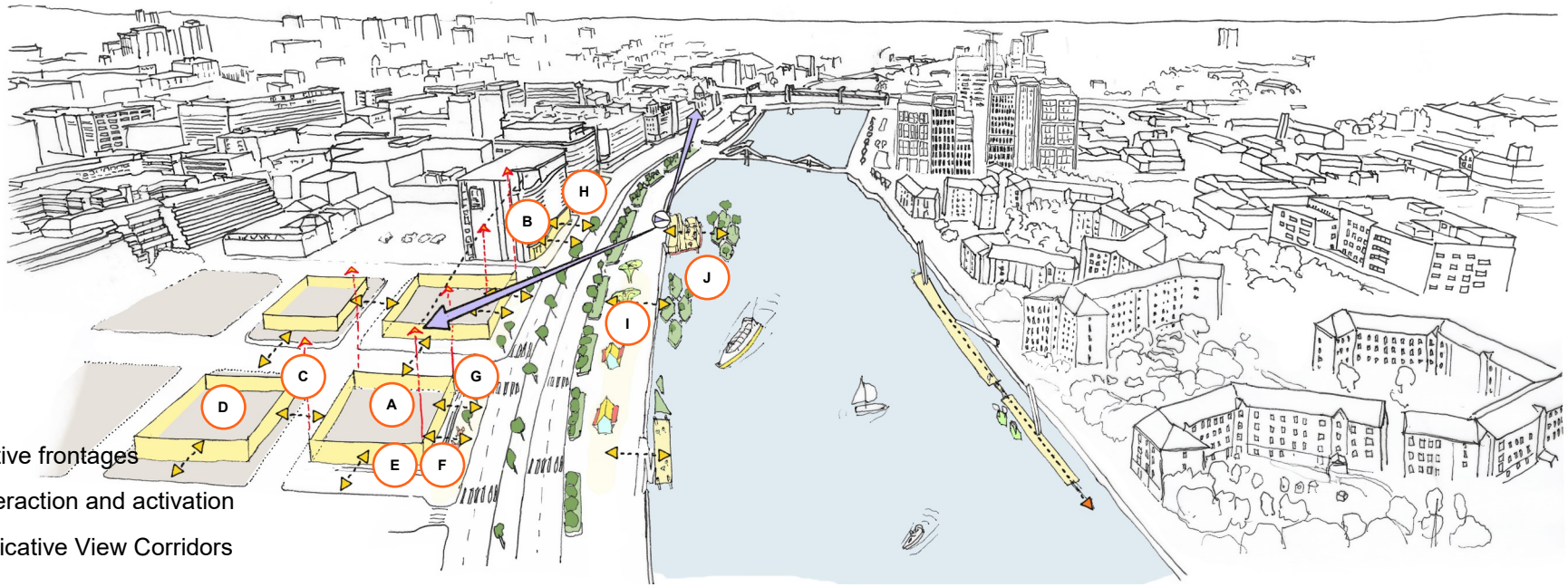


Fig. A

Key

Active frontages

Interaction and activation

Indicative View Corridors

Core Principle 2. A River Park

The River Corridor is the city's largest, continuous open space and development should seek to maximise the location and 'build with the river' to create an attractive, welcoming and accessible waterfront.

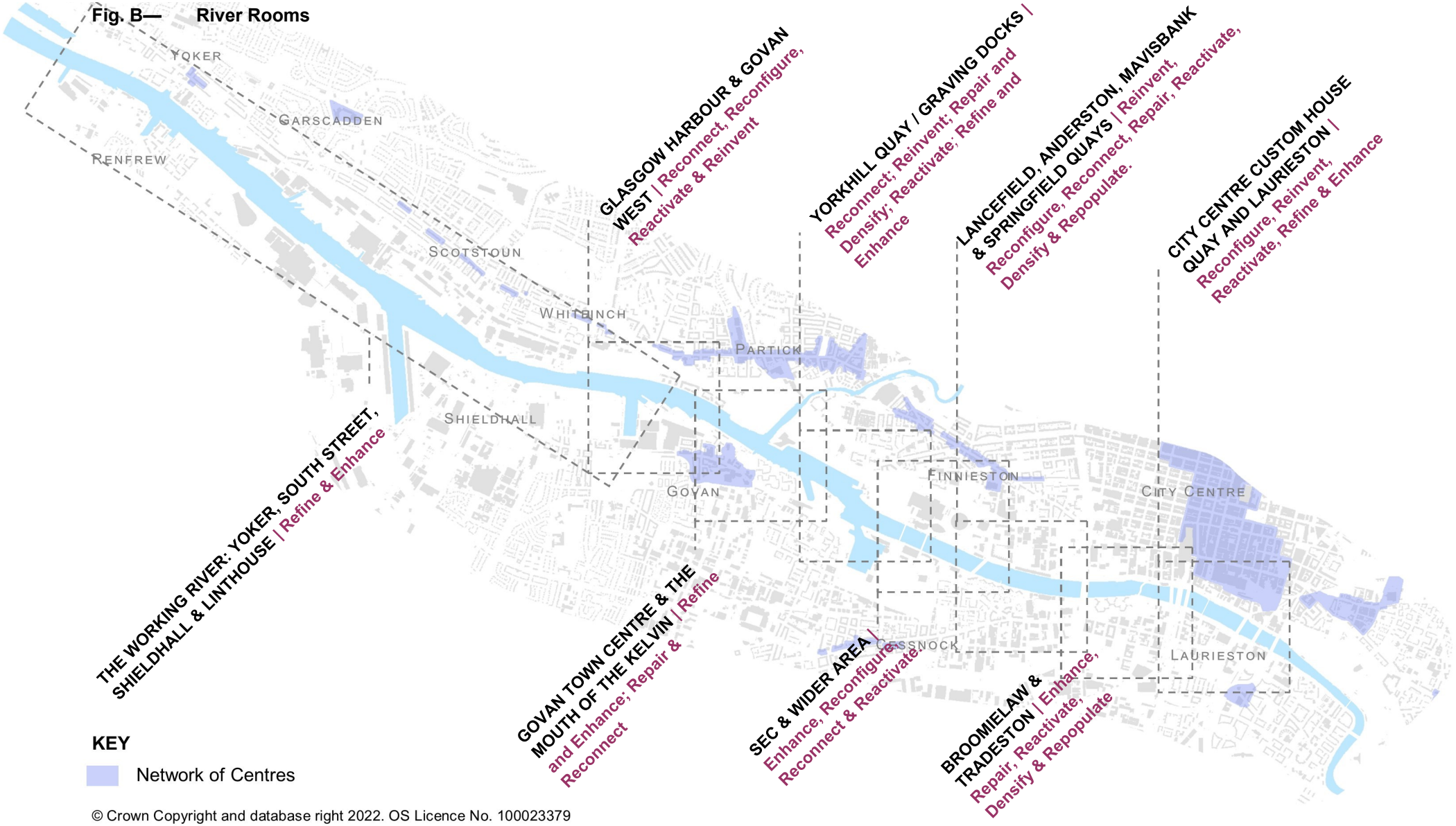
This Core Principle supports delivery of a **River Park** which will be progressed, in part, by the development of vacant sites and by creating new/ enhancing existing open space. The aim should be to provide a 12 metre set back from the river on both banks. The set back could be achieved by providing a minimum 3m designated pedestrian walkway combined with a minimum 3m designated cycleway. The addition of respite strips, that respond and adapt to the constraints of the site, could provide open space for other functions such as play or SUDs etc.

Open space is considered as an appropriate land use within an area at risk of flooding and we want to ensure that open space provision, as part of new development, aligns with the ambitions of the Glasgow Open Space Strategy and assists with the delivery of the River Park.

Different character areas, identified as River Rooms in Appendix B of the River Clyde Development Corridor SDF should be respected and the relationship to the water promoted as an asset (see Fig B) .

Development at key locations within the city centre has the potential to improve open space provision and act as an attractor, particularly when brought forward as part of a masterplan for the area. Meanwhile and temporary uses may help activate spaces along the river while permanent solutions are being developed.

Fig. B— River Rooms



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A. Development proposals should support the delivery of a continuous linear park through the siting and design of open space and public realm.

B. The river should be respected as the main focal point and destination, and proposals should be innovative, responsive and contextual.

C. Spaces should be designed to be multifunctional, safe and inclusive. They should incorporate opportunities for relaxation, socialising, play and events.

D. Nature-based solutions can help create a climate adaptive waterfront.

E. Over-engineered solutions, such as steps and/or barriers should be minimised, with any steps integrated into the design.

F. Visual and physical connections to the river should be enhanced through river edge treatment that maximises views to, across and along the waterfront.

G. The design of open spaces should support future adaptation and different uses over time (e.g. food growing).

H. Design choices should prioritise climate resilience and support biodiversity. Where possible, existing habitats should be retained and enhanced.

I. The integration of open space in building design, though for example green roofs, walls and balconies, is supported.

J. Proposals should consider the river as a space for recreation with the potential for increased water-based activities. New and enhanced quay walls will help facilitate a better relationship with the water.

K. The identity of the River Corridor should be communicated through choices of planting, landscaping, public art, lighting and materials.

L. Early consideration should be given to the adoption status and management/maintenance of open spaces.

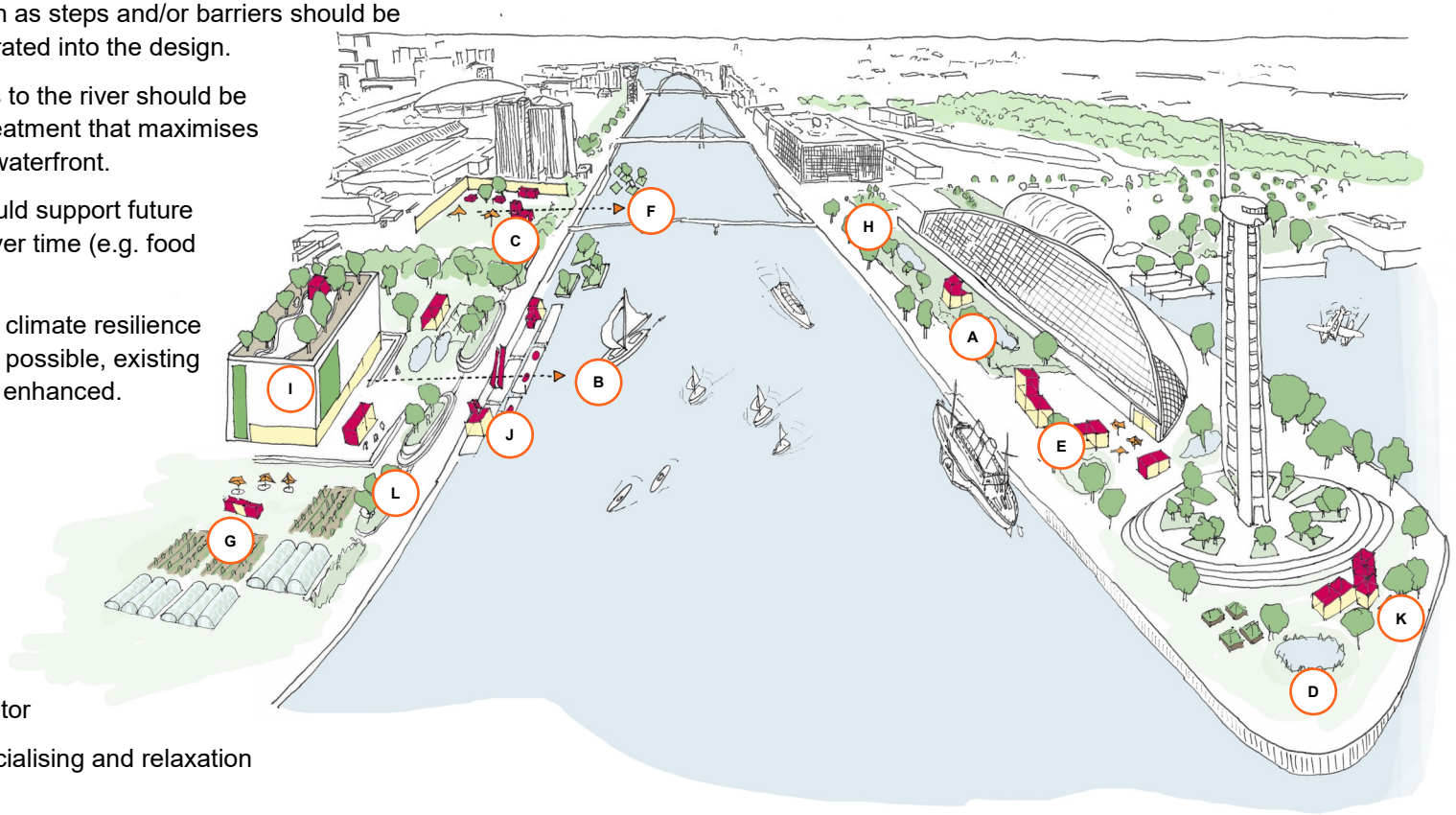


Fig. C

Key

Active Frontages / Activity generator

Opportunities for play, events, socialising and relaxation

Core Principle 3. Flood Risk Management

To create a climate-adaptive River Corridor, where flood risk is managed, and also achieve our vision of a liveable waterfront, there is a critical need to retain and enhance the built-up, urban nature of the River Corridor. As such, the appropriate development of key sites is supported.

However recent proposals in areas at risk of flooding* have not been realised due to concerns about their impact on wider flood management. A proportionate approach, working in partnership with key agencies including SEPA, is promoted to manage flood risk and realise development. **(Areas at risk of flooding are defined are defined by NPF4 by 0.5% Annual Event Probability plus an appropriate allowance for future climate change.)*

The City Development Plan sets out policies and provides guidance on development within the functional floodplain (see CDP 8: Water Environment and SG8 Water Environment). These policies identify floodplain areas as development constraints to protect them from development. Following engagement with SEPA, this Design Guidance expresses the most up-to-date position relevant to the Glasgow context.

Any proposal for development affecting a floodplain area constraint will be assessed in line with the updated **Tidal River Clyde Flood Model** and the **Tidal Clyde Development Masterplan Principles** (please note the current masterplan principles are currently being updated in line with NPF4) **& Flowchart (see Part C)** and would have to either demonstrate it has no impact on floodplain storage or make provision for alternative compensatory storage.

The updated Tidal River Clyde Flood Model replaces the River Clyde Flood Management Strategy model. It represents the best available understanding of current and future flood risk from the tidal Clyde for fluvial (river flooding)

events and coastal flooding, including storm surge events and sea level rise, to the year 2100. It identifies the likelihood of flooding along the river and its potential impact upon specific sites.

Image Credit Signify

Tidal Clyde Development Masterplan Principles

Please note the current masterplan principles below are currently being updated in line with NPF4

The below principles are set out to help inform the preparation of development masterplans for previously used (brownfield) sites along the tidal Clyde corridor.

These principles should be considered in tandem with NPF4 and seek to balance regeneration and reuse of brownfield land as promoted by Clyde Mission, with the objective of not increasing flood risk.

The expectation is that developers will formulate masterplans that avoid locating vulnerable* land uses in a flood risk area.

1. No net loss of floodplain capacity as identified by 0.5% Annual Event Probability (AEP) (1:200yr) flood extent plus an appropriate allowance for climate change.

2. No 'highly vulnerable' uses (residential / hotel accommodation) with a finished floor level below 0.5% AEP (1:200yr) flood extent + climate change + 0.9m freeboard.

3. Emergency pedestrian access / egress routes from 'highly vulnerable' uses to be above 0.5% AEP (1:200yr) flood extent + climate change**.

4. Buildings providing accommodation for 'least vulnerable' uses shall adopt resilient design principles where the finished floor level is below 0.5% AEP (1:200yr) flood extent + climate change + 0.9m freeboard.

5. Masterplans that include proposals for buildings where the finished floor level is below 0.5% AEP (1:200yr) flood extent + climate change shall demonstrate how these spaces would be adapted for climate change.

6. The developer and any future owners, factor and occupier of the site shall sign up to the existing flood warning service. The site shall have an emergency plan to be followed when a flood warning is issued. The emergency plan may include building areas below 0.5% AEP (1:200yr) flood extent + climate change level being closed to the public during a Flood Warning for the tidal River Clyde. ***

7. Where elevated buildings are proposed, the underside of the building should be unused in perpetuity as per SEPA's position statement on elevated buildings in areas of flood risk. Where there are no alternative options for car parking, bin storage etc. within the development site, a risk-based approach may be considered. This will only apply to sites where the flood risk is tidal and flood risk events can be predicted in advance

* for designation of land use vulnerability, see the latest version of SEPA Flood Risk and Land Use Vulnerability Guidance - https://www.sepa.org.uk/environment/land/planning/guidance-and-advice-notes/

** the appropriate value for climate change should be derived from the latest Tidal Clyde Flood Model, up to a maximum value of 0.85m.

*** appropriate text to align with this principle will be included as a planning condition by the Planning Authority.

i. Sites along the River Corridor should be developed in a way that recognises the challenge of increased flood risk.

ii. Developers are encouraged to be proactive at the early planning stages and bring forward adaptation strategies that understand the risk of flood and remedial repair in the event of floods.

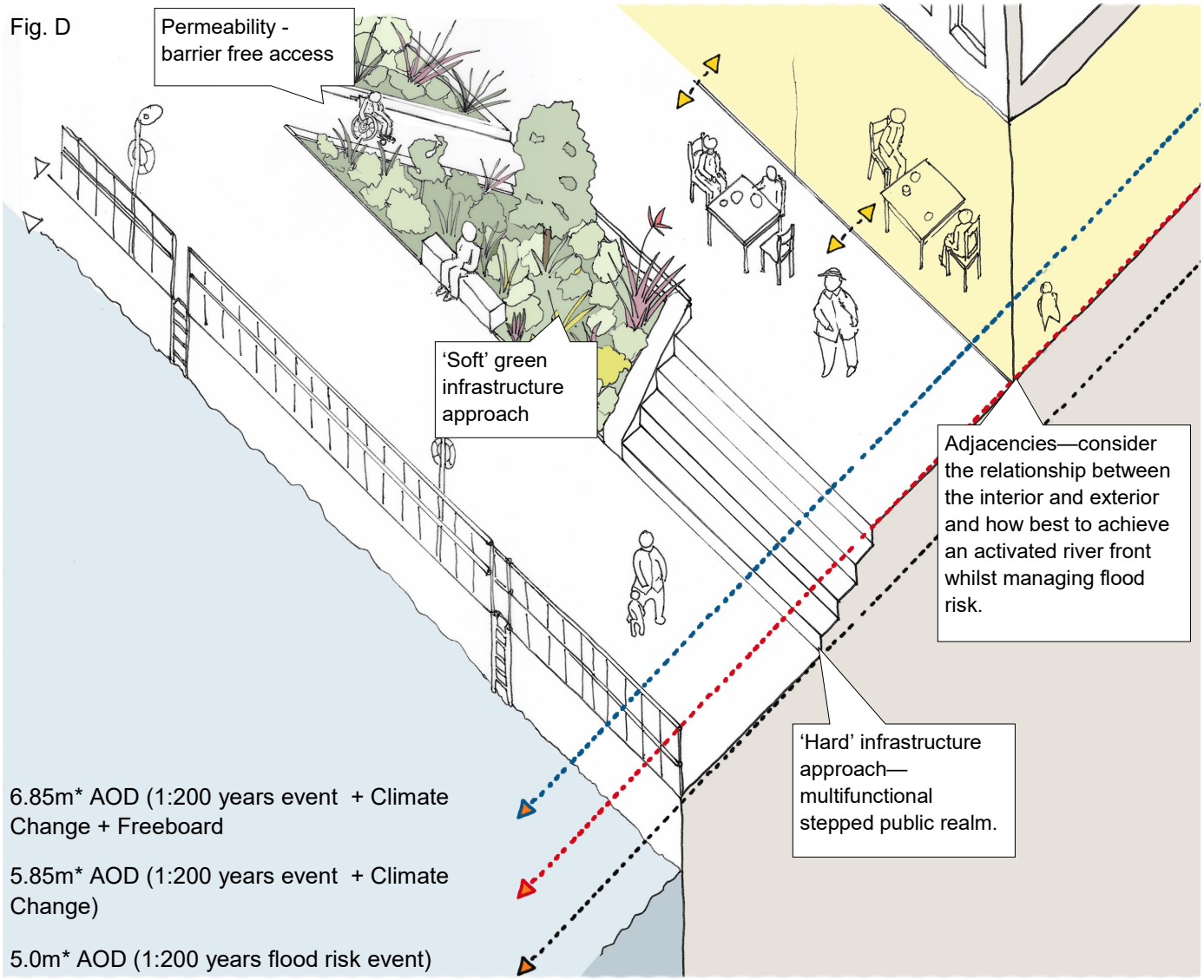
iii. Consideration should be given to the extent of the site within the a flood risk area as detailed below:

- For Marginal flood risk sites (no more than 25% of the proposed development site is within the flood risk area), the avoidance approach should be adopted i.e., the footprint of the building should not be located in a flood risk area.
- In exceptional circumstances within marginal sites, development in a flood risk area could be accepted subject to meeting the principles outlined in the Tidal Clyde Development Masterplan Principles & Flowchart. Specifically, on the developed site, there would be no floodplain storage loss, no increase in flood risk at the site or elsewhere, and any mitigation measures incorporate a climate change allowance and safe (dry) access/egress.

iv. A catchment approach should be adopted where more than 25% of the site is within the flood risk area to ensure no net loss of floodplain storage. For the site to be progressed, this will require adoption of the catchment approach to ensure no loss of floodplain storage or increase in flood risk. All other Tidal Clyde Development Masterplan Principles should be adopted.

v. Residential and non-residential properties can be made more resilient and adaptable by incorporating a series of measures that minimise the adverse impact in the event of flooding.

Fig. D



** These are indicative numbers and the Tidal River Clyde Flood Model should be consulted for site specific values*

vi. If the principle of development for a marginal site is acceptable, developers should consider adaption of their building proposals to deal with water ingress and flood risk. This could include nature-based solutions, proposed floor levels, flood resilient design, safe (dry) access/egress routes and operational procedures in the event of a flood.

vii. The developer and any future owners, factor and occupier of the site shall sign up to the existing flood warning service. The site shall have an emergency plan to be followed when a flood warning is issued. The emergency plan may include building areas below 0.5% AEP (1:200yr) flood extent + climate change level being closed to the public during a Flood Warning for the tidal River Clyde. This will be achieved through a Planning condition.

viii. Property flood resilience (PFR) measures include both water resistance (i.e., preventing entry of water) and water resilience/ recoverability (i.e. waterproof materials, elevated utilities, etc). Further guidance is available in CIRIA C790 – Code of Practice for Property Flood Resilience.

Core Principle 4. Land Use Vulnerability and Mix of Uses

To support development along the River Corridor, a site-based approach to land use vulnerability should be adopted, as set out in the Tidal Clyde Development Masterplan Principles.

The location of development within a site should contribute to the creation of a walkable, vibrant River Corridor and support the 20-minute neighbourhood concept where a mix of uses, including retail and leisure, are easily accessible on foot.

The River Clyde Strategic Development Framework (SDF) encourages mixed use development and proposals should seek to achieve a diversity of uses across the site to attract people and enhance vibrancy. This is supported by the relevant policies in the Glasgow City Development Plan.

Design Guidance: Land Use Vulnerability and Mix of Uses

A. In making decision about the appropriate location of uses within the site, consideration should be given to land use vulnerability. The aim of providing a 12m set back to accommodate a River Park, could be achieved, in part, by exploiting site constraints.

B. Consideration should be given to the mix of uses within a site to support placemaking principles and increase activity.

C. A mix of uses should also be considered within individual buildings.

D. Accessibility to appropriate amenities (open space, community infrastructure, retail, education, health and social care, recreation and leisure) should be considered to help achieve a 20-minute neighbourhood.

E. A range of housing types and tenures should be offered within the site.

F. Active frontages at street level are essential to support vibrancy and enhance passive surveillance.

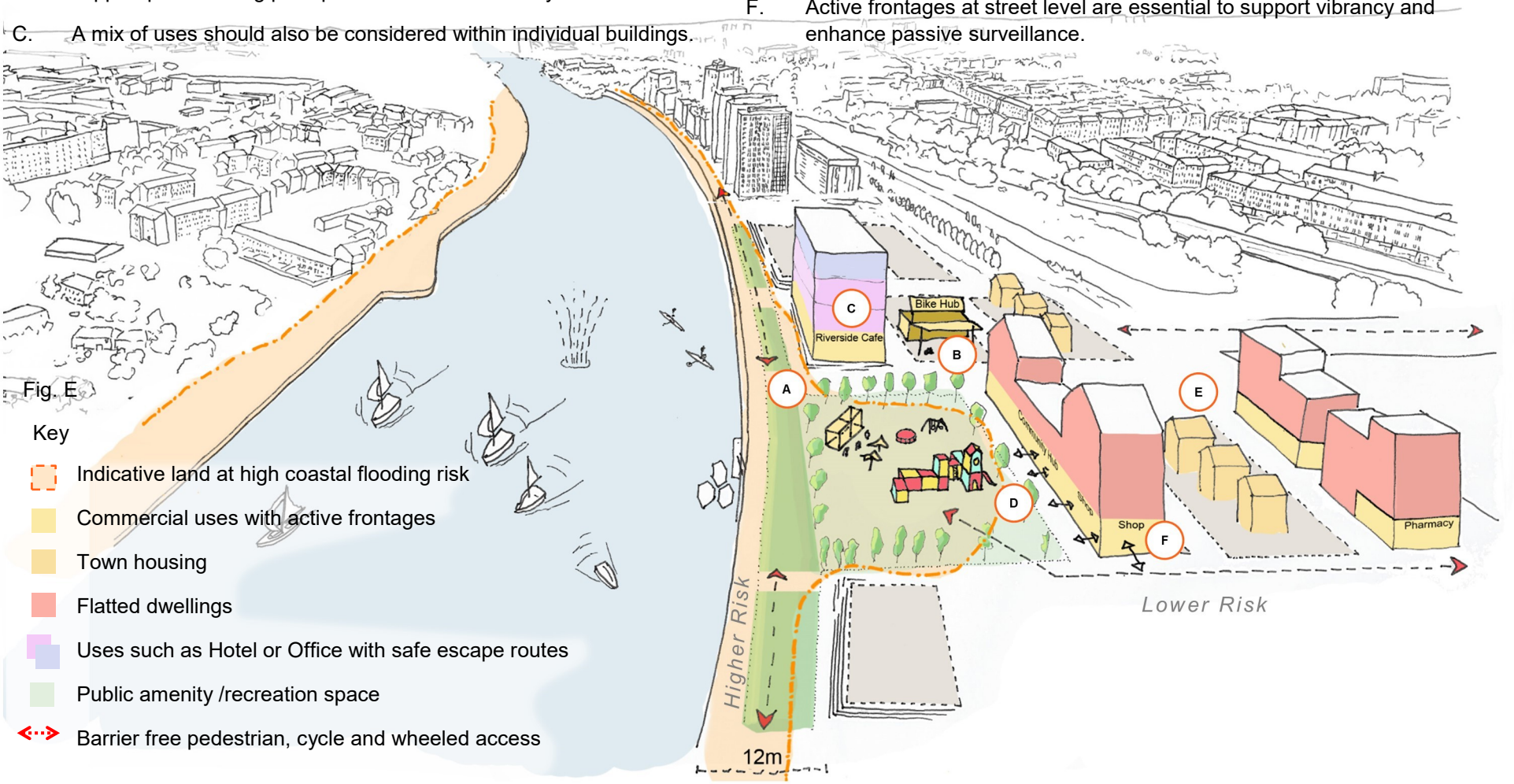


Fig. E

Developments along the River Corridor should support the 20-minute neighbourhood concept through the provision of infrastructure that connects with local centres. Good access, well-designed public spaces and streets that are rebalanced towards walking, wheeling and cycling can encourage active travel, and, in turn, can bring about social, health and environmental benefits.

The River Clyde Strategic Development Framework (SDF) seeks to enhance connectivity by creating continuous, people-centred routes along, to and across the river. The SDF sets out the following approach to achieve a well-connected river:

- Walking and cycling routes should continue along both banks of the river.
- Activities should be clustered and link people to jobs, town centres, services, and public transport.
- Access to new bridges from existing walking and cycling infrastructure should be maximised.

A. New development should accommodate active travel routes to improve connectivity within sites and to the wider network. Sites may need to accommodate separate routes for active travel/commuting and routes for leisure (walking, wheeling and cycling).

B. Routes for walking, wheeling and cycling should be well-designed, robust and accessible, and should link to existing streets and spaces.

C. Routes should be well-lit and the use of innovative and cost-effective/ smart lighting should be considered.

D. Open spaces and public realm along the River Corridor should be designed to be safe, inclusive and overlooked.

E. Innovative treatment of boundaries should be considered to enhance connectivity and the relationship with the river.

F. Opportunities to arrive at the river should be maximised by reducing physical barriers and promoting permeability across sites.

G. Wayfinding and public art should be included in proposals to enhance legibility, contribute to place identity and, through local community engagement, foster a sense of belonging.

H. Consideration should be given to physical and visual connections to, along and across the river.

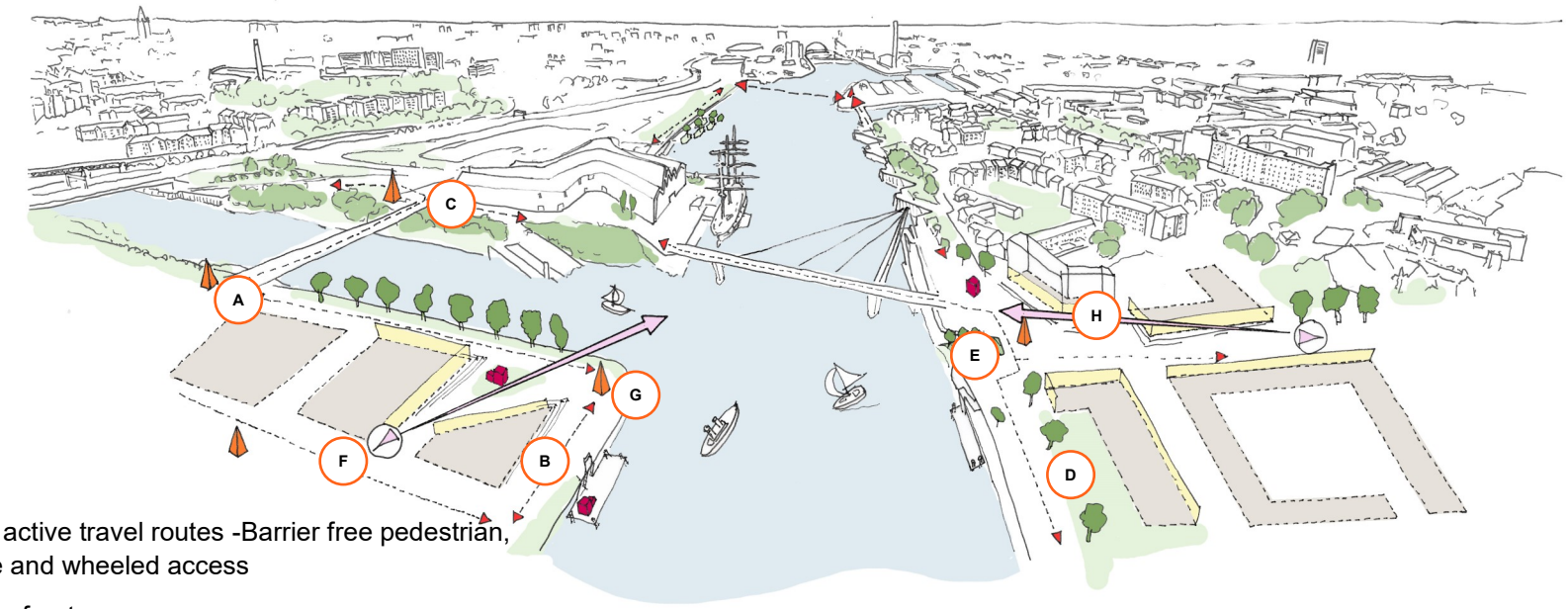


Fig. F

Key

◄- -► New active travel routes -Barrier free pedestrian, cycle and wheeled access

Active frontages

Wayfinding and public art to enhance legibility

Indicative View Corridors

The provision of parking within the site should take account of placemaking objectives as well as land vulnerability. Consideration should be given to the management of parking spaces within a site during flood events.

Access to public transport and the creation of links to the wider movement network will support a sustainable and connected River Corridor and promote equal access to employment opportunities, health, education, and other services.

CDP 11 Sustainable Transport of the Glasgow City Development Plan sets out the Council's policy for safeguarding, enhancing and developing the movement network. It seeks to ensure that Glasgow is a connected city, characterised by sustainable and active travel.

SG11 Sustainable Transport sets out detailed guidance and supports a placemaking approach to ensure walking and cycling provision is incorporated in new development.

A. Parking provision should be integrated into the development and support the placemaking ambitions for the River Corridor including the creation of a civic waterfront and the delivery of a River Park.

B. Where undercroft parking is proposed, the risks during flood events should be fully assessed.

C. Undercroft parking should not result in blank frontages or in voids that are not overlooked.

D. The site layout should maximise links to the wider movement networks including the proposals contained in the draft Transport Strategy, Liveable Neighbourhood locations, Fastlink and the draft Metro proposal.

E. Where sites are well connected to public transport hubs and active travel routes, proposals for car-free development would be considered.

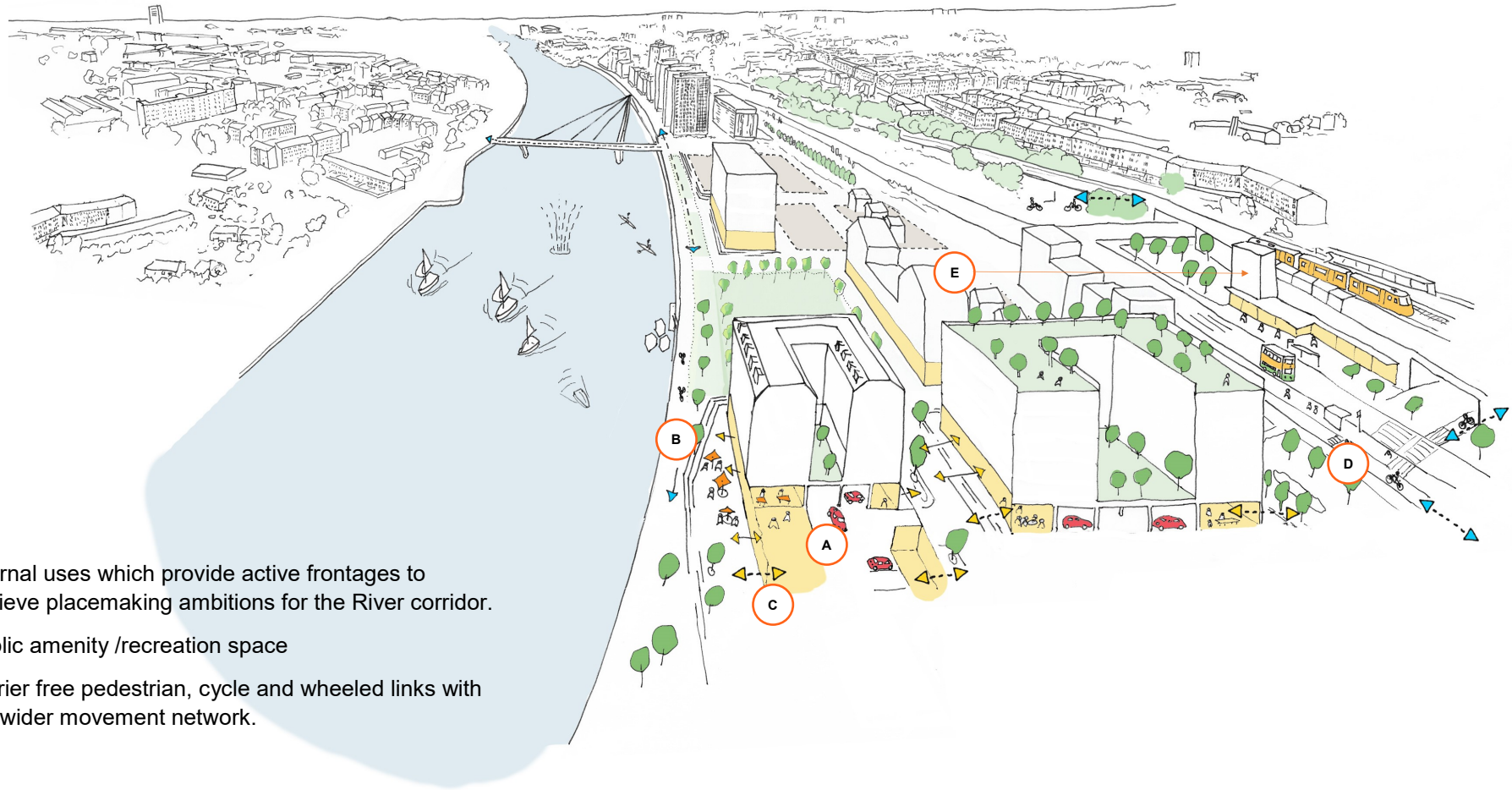


Fig. G

Key

Internal uses which provide active frontages to achieve placemaking ambitions for the River corridor.

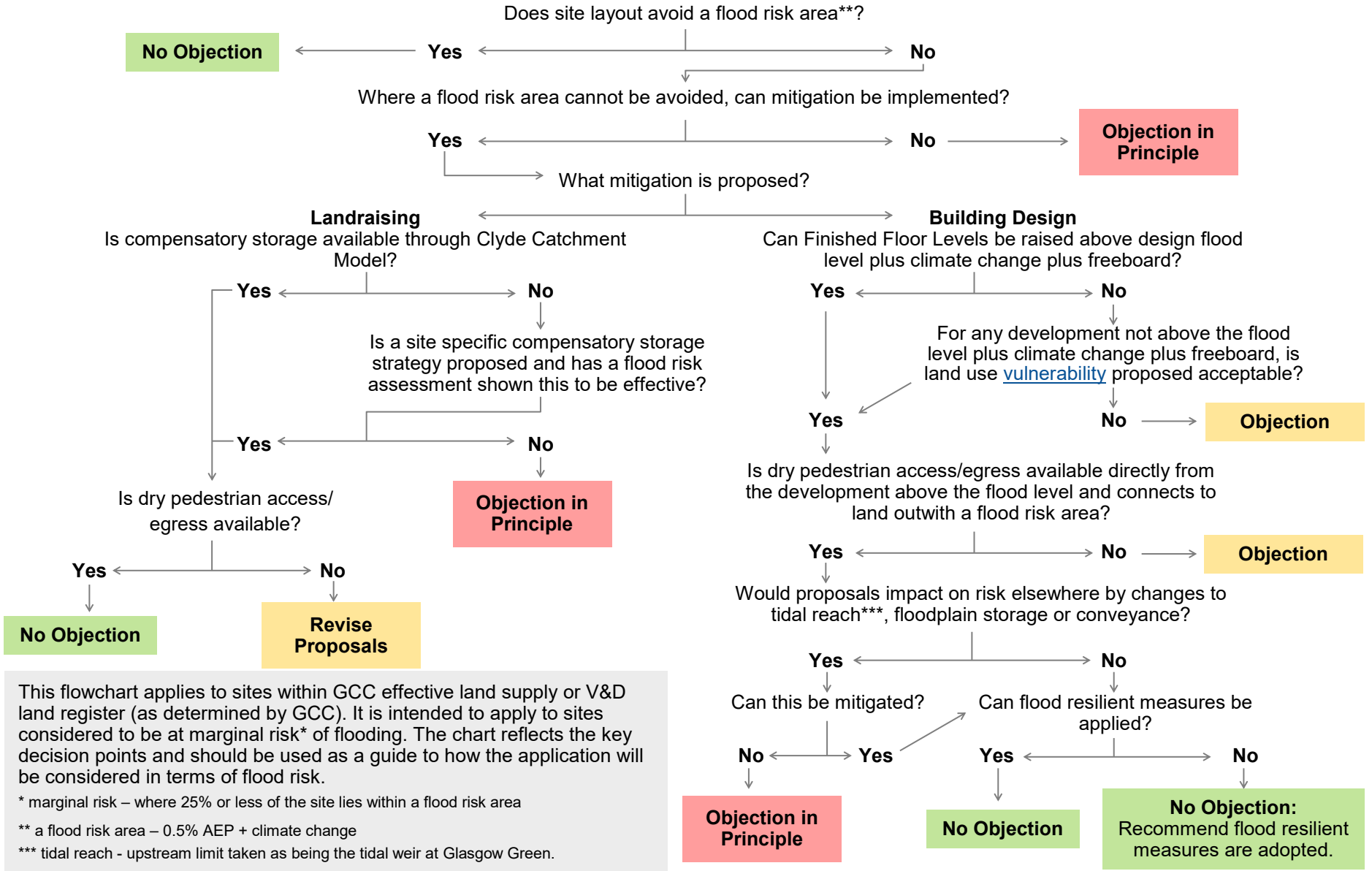
Public amenity /recreation space

Barrier free pedestrian, cycle and wheeled links with the wider movement network.

Part C

Tidal Clyde Development Flowchart

TIDAL CLYDE DEVELOPMENT FLOWCHART



This flowchart applies to sites within GCC effective land supply or V&D land register (as determined by GCC). It is intended to apply to sites considered to be at marginal risk* of flooding. The chart reflects the key decision points and should be used as a guide to how the application will be considered in terms of flood risk.

* marginal risk – where 25% or less of the site lies within a flood risk area

** a flood risk area – 0.5% AEP + climate change

*** tidal reach - upstream limit taken as being the tidal weir at Glasgow Green.