New mixed use development



The greatest potential for carbon reduction is within existing buildings, but Edinburgh's growing population means that major new developments are urgently needed, especially around the edge of the city where land is available.

At the Granton Waterfront and Western Harbour area, major regeneration projects are pioneering sustainably planned communities and zerocarbon homes.

These new places are being designed to embody the principles of '20-minute neighbourhoods', where most of the daily needs of local people are met without using cars or travelling very far. They are also connected to Edinburgh's electric tram network.

Western Harbour

The masterplan for Western Harbour will transform empty, reclaimed land in the Port of Leith to create a new waterfront community of 1,600 homes. The neighbourhood will include shops, offices, a new school, a health centre and one of the largest new parks in the city for over a hundred years.

The streets and spaces are designed to prioritise people over vehicles, encouraging residents to actively use them and help grow a sense of community.







- 'Go Green Hub' serving the development.
- 2/3 Images of Western Harbour showing high quality spaces and mixeduse buildings, consistent with the 20-minute neighbourhood concept.

Images © 7N Architects & Darc Studio.

Client: Forth Ports Ltd.Development Manager: Rettie & Co.Project Manager: AxiomArchitect: 7N ArchitectsLandscape: Rankin FraserCost Consultant: Gardiner & TheobaldM&E/Sustainability: Atelier TenStructural Engineers: Woolgar HunterInfrastructure: Arup/Woolgar HunterTransport: SWECO/Transport Planning Ltd.







1-3 Images of Western Harbour development.

Images © 7N Architects & Darc Studio.





Granton Waterfront

Like Western Harbour, this project has a masterplan based on 20-minute neighbourhood principles. The buildings themselves will achieve exemplary levels of carbon reductions as new techniques become available.

The ultimate vision for Granton Waterfront:

- A sustainable, coastal community that is an integral part of the city.
- A place where people want to work, live, learn and visit.
- Safe and pleasant streets which prioritise walking and cycling.
- Limited parking provision, with emphasis on car sharing and electric vehicle charging points.
- A place that invites entrepreneurship, innovation and sustainable living.

Principles for the buildings

- Full blocks to create urban character;
- Building scale 3–6 storeys;
- 'Gateways' at key junctions;
- Material differentiation and setbacks to upper storeys;
- Natural light and localised amenity spaces;
- 'Fabric first' approach to minimise energy demand;
- Sustainable drainage solutions incorporating rain gardens etc.

Masterplan challenges

- Continuous improvement in carbon reduction during the construction process;
- Development of modular methods of construction in future phases to increase efficiency, reduce waste and improve safety;

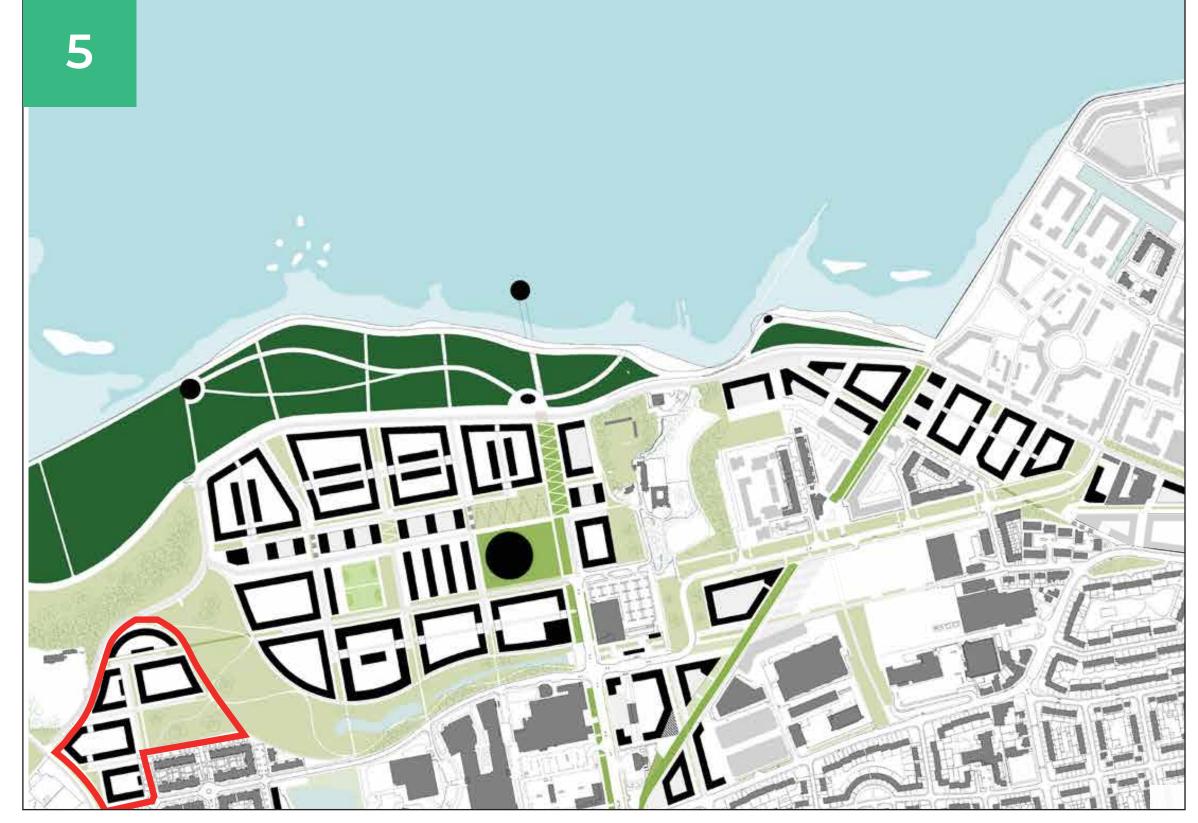


- Western Villages development.
- 2 Plan showing extent of Granton Waterfront masterplan.
- **3** Aerial view showing location of Western Villages development.
- 4 Site layout for Western Villages development.
- 5 Masterplan of development areas,
 showing layout of blocks, open spaces
 and routes. Western Villages is bottom left.

Images © Cooper Cromar, Oobe and CCG Group.

- A consideration for the marine environment when creating the surrounding landscape.
- Promoting the regeneration of surrounding communities.
- Managing the transition from reliance on the car to more sustainable, multi-modal forms of transport and movement;
- Changes in market conditions during the long regeneration process.





Client: City of Edinburgh Council

Employers Agent: Arcadis

CEC Framework Contractor: CCG (Scotland)

Architect: Cooper Cromar

Engineer: BSA

Landscape Architect: Oobe

Services Consultant: Arch-tech / Hawthorne Boyle Associates

Energy Consultant: Carbon Futures

Acoustic Consultant: Sandy Brown Associates

Ecologist: TEP

Archaeologist: Headland Archaeology

TPL: Transportation

Air Quality: Viridian Air Quality

Architect/Master Planner: Collective Architecture

Urban Designer: Studio for New Realities,

Energy and Utilities: Arup

Cost Consultant: Gardiner and Theobald

Landscape Architect: LUC

Transport, Flood & Ecology: AECOM

Net-zero carbon residential buildings

In accordance with the masterplan, 444 mixed tenure flats are set within several 4-6 storey urban blocks with central, communal, landscaped gardens and direct street access for family sized accommodation. The whole development adopts a low energy strategy that reflects the ambitious net-zero 2030 target.

Flats have been designed generously for changing work patterns such as home working and open plan living, for further flexibility of living space.

The layout of the development emphasises walking and cycling, linking new and existing landscaped amenity spaces to the proposed shared-surface street network and wider coastal cycle links. Public transport links and the adoption of active travel opportunities within the wider area will ensure a sustainable setting for this new and vibrant neighbourhood. Parkland views of the This has been achieved by adopting the following approaches:

- Enhanced insulation for ground floors,
 external walls and roofs;
- Reduced thermal bridging for all construction junctions;
- Zero heat loss through separating walls;
- Triple glazed low-emissivity windows;
- 'Whole dwelling' mechanical ventilation systems;
- Comfortable levels of air-tightness.

Together with district heating from air-source heat-pumps and solar photovoltaic panels that avoid the use of fossil-fuels, operational carbon emissions are estimated to reduce by 75% below the minimum standards set by Scottish Building Standards. The remaining 25% will be achieved via City of Edinburgh Council's 'Community To reduce the embodied carbon emissions from construction, apartment blocks will use several techniques:

- Off-site manufactured CCG iQ panelised timber frame solution;
- Timber kit construction for walls and separating floors instead of blockwork and concrete;
- Minimising the use of concrete and cement;
- Sourcing finishes and other products from low carbon sources;
- Minimising material waste and vehicle movements.

The project is expected to commence construction early 2022 with completion towards the end of 2024.

Building challenges

Possible short-term shortage of construction

adjacent Forth Quarter Park and coastal views to the River Forth further enhance the development.

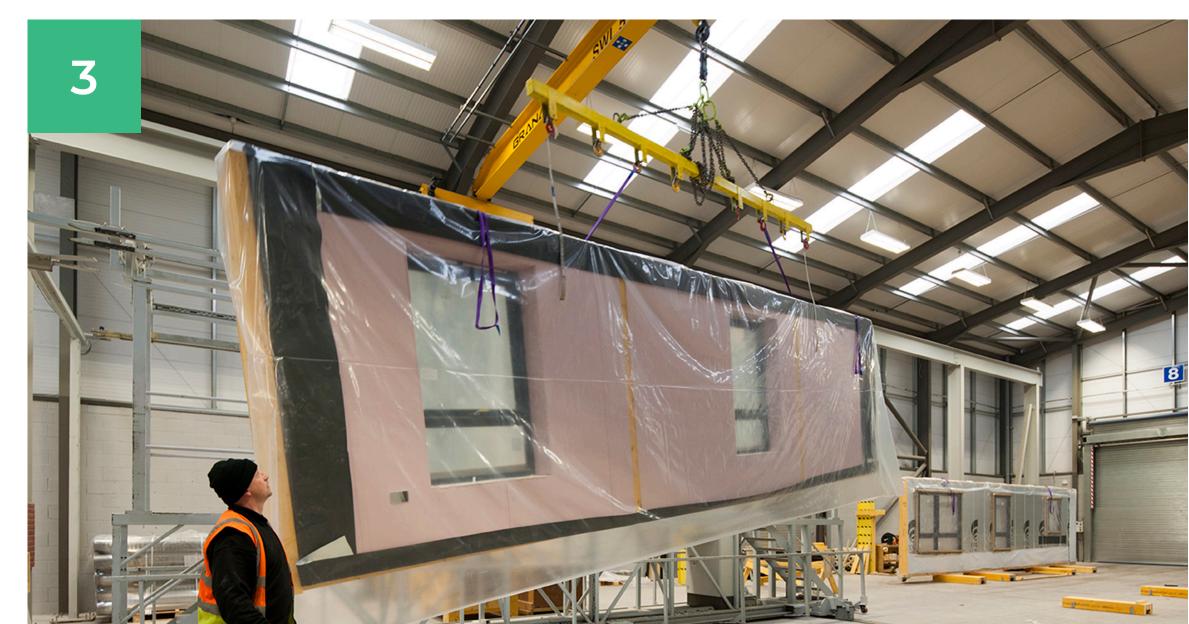
The energy strategy for the new apartments has been developed using a newly formed building standard created by CCG (Scotland) named 'The CCG Net Zero Home'. This standard emphasises enhanced fabric performance and additional low carbon technologies to vastly reduce energy demand and costs to the end-user. Carbon' offsetting scheme.

materials.

- Changing the Scottish timber industry to focus more on building construction.
- Changes to working environments
 i.e. home working.









- Illustration of new neighbourhood, with the gas holder preserved as a local feature.
- 2 View of Western Villages development.
- **3-4** Factory-produced timber housing units.

Images © Cooper Cromar, Oobe and CCG Group.

