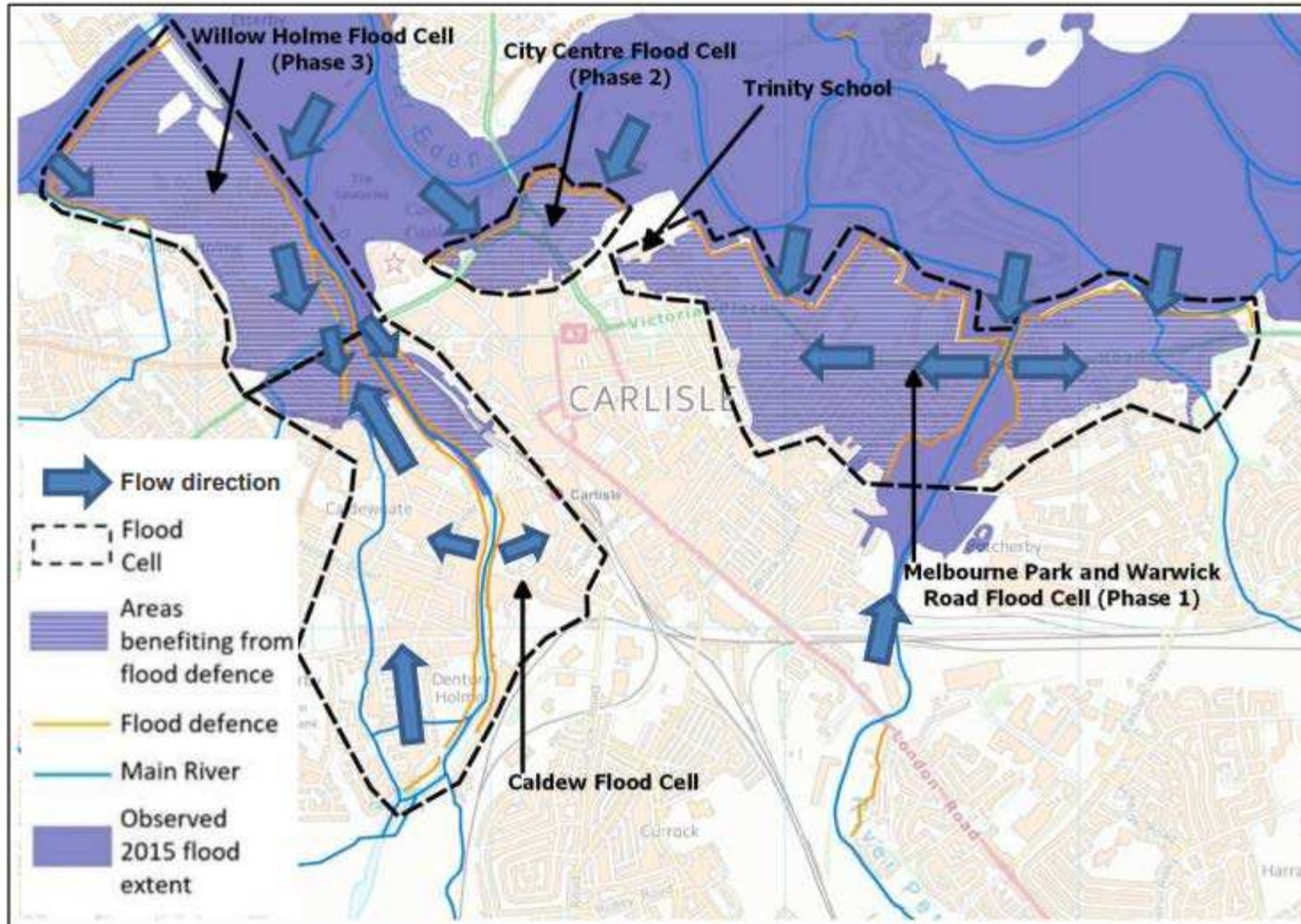


Update to Economic Growth Scrutiny Panel, Carlisle City Council by Environment Agency

2nd December '21

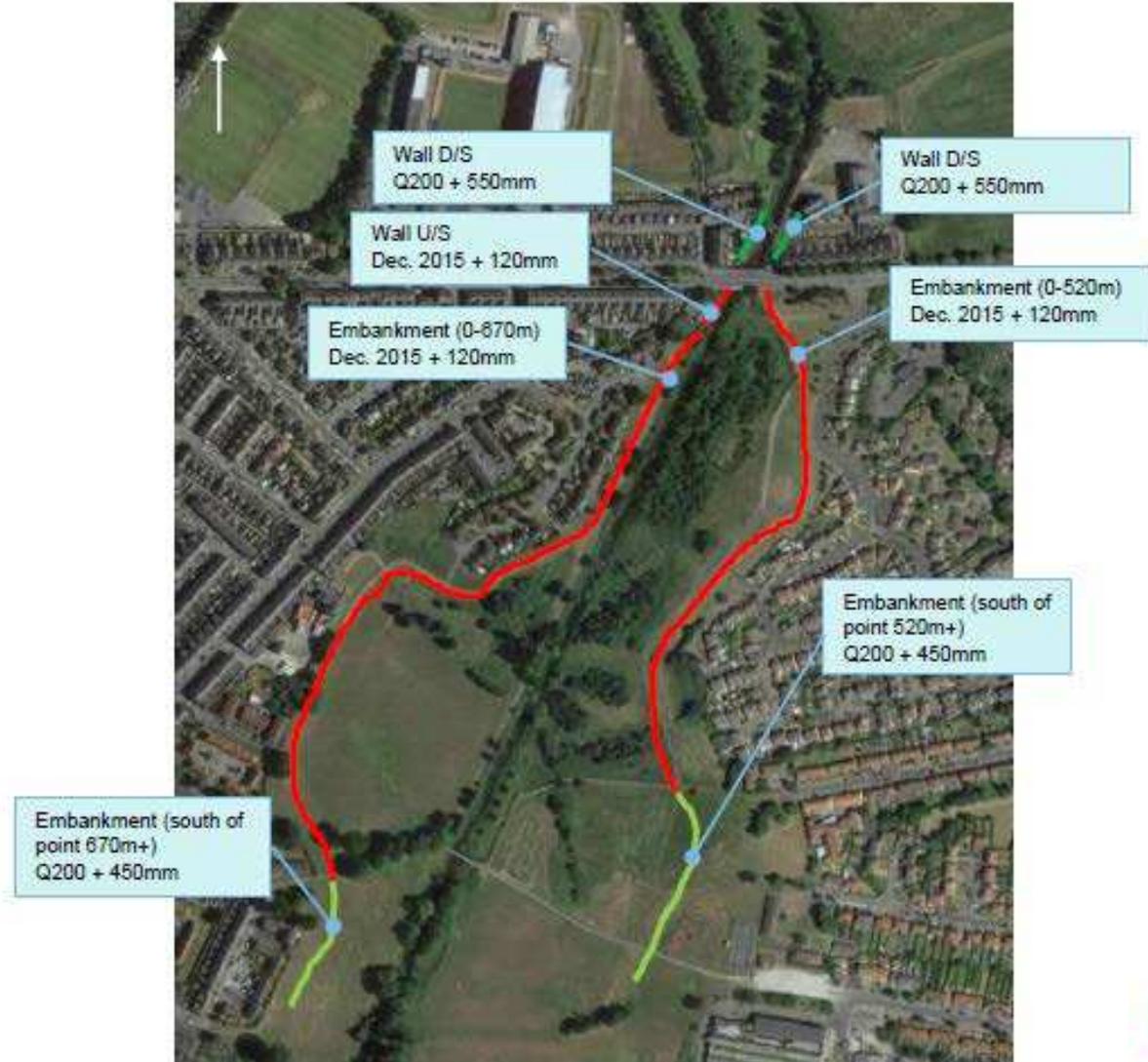
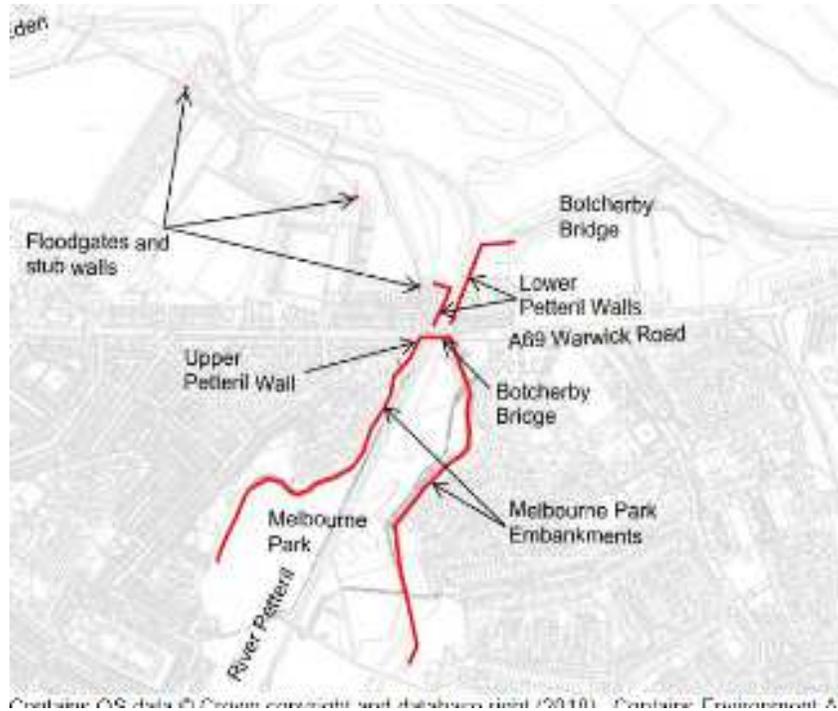
Carlisle phases overview recap



- 3 main phases
- 2 completed (1 & 2)
- 1 in appraisal (3)
- Phase 1b – Design
- Old Laundry Culvery – under construction
- Satellite schemes – Gosling Sike, Rickerby completed
- Etterby Terrace – in appraisal
- Low Crosby - design
- Parham Beck – future pipeline

Phase 1 and phase 1a – what has been built

Figure 2: Freeboard Plan



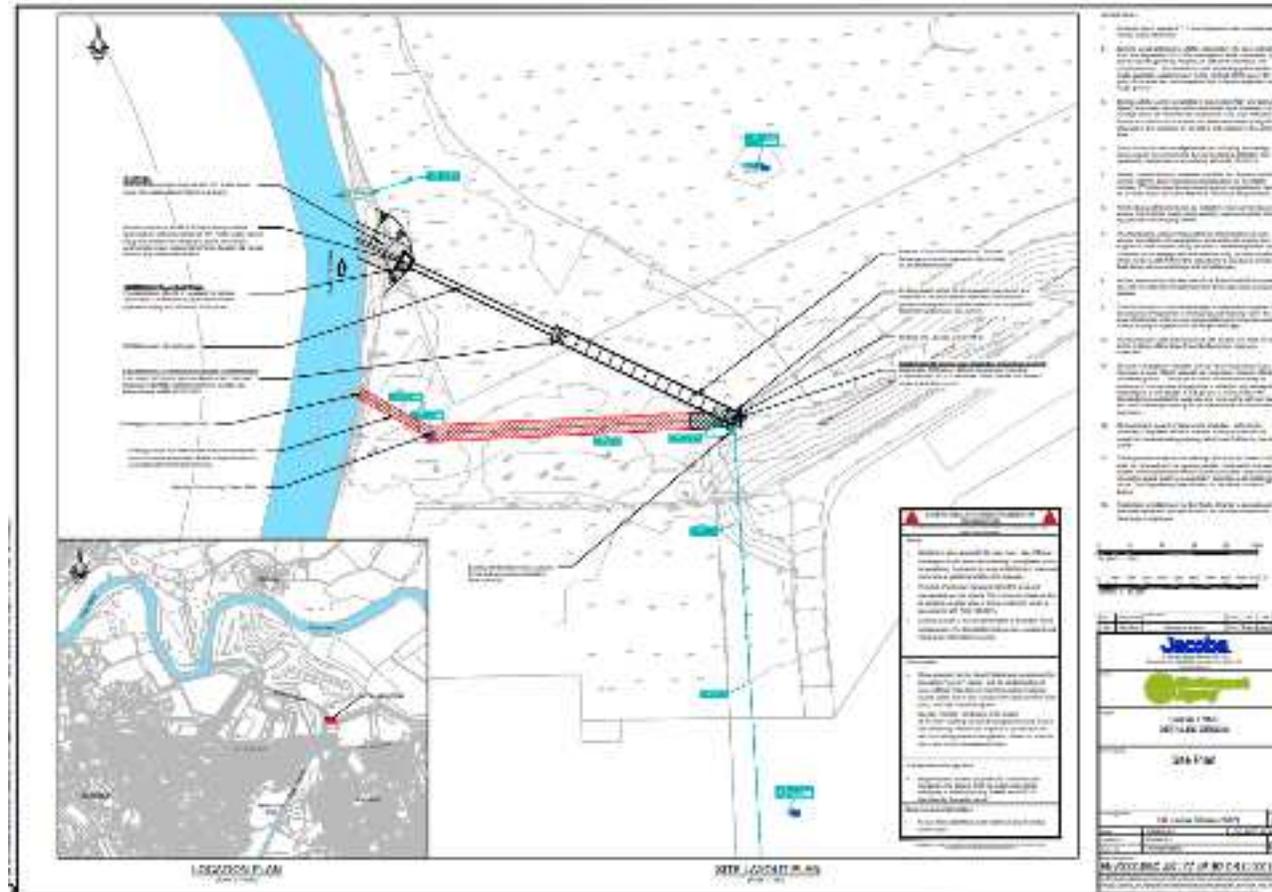
Phase 1a – Eden embankments raised from Tescos to Trinity



Phase 1b and Old Laundry Culvert



Old Laundry Culvert



Phase 2

Overview

[Map](#)

[Programme](#)

[Newsletters](#)

[Area 2 - The Swifts Embankment](#)

[Area 3 - The Sands Centre Walls](#)

[Area 4 - The Sands Centre Western Embankment](#)

[Area 5 - Bitts Park East Wall](#)

[Area 6 - Bitts Park Wall](#)

[Area 7 - Bitts Park Embankment](#)

[Area 8 - Bitts Park West Wall](#)

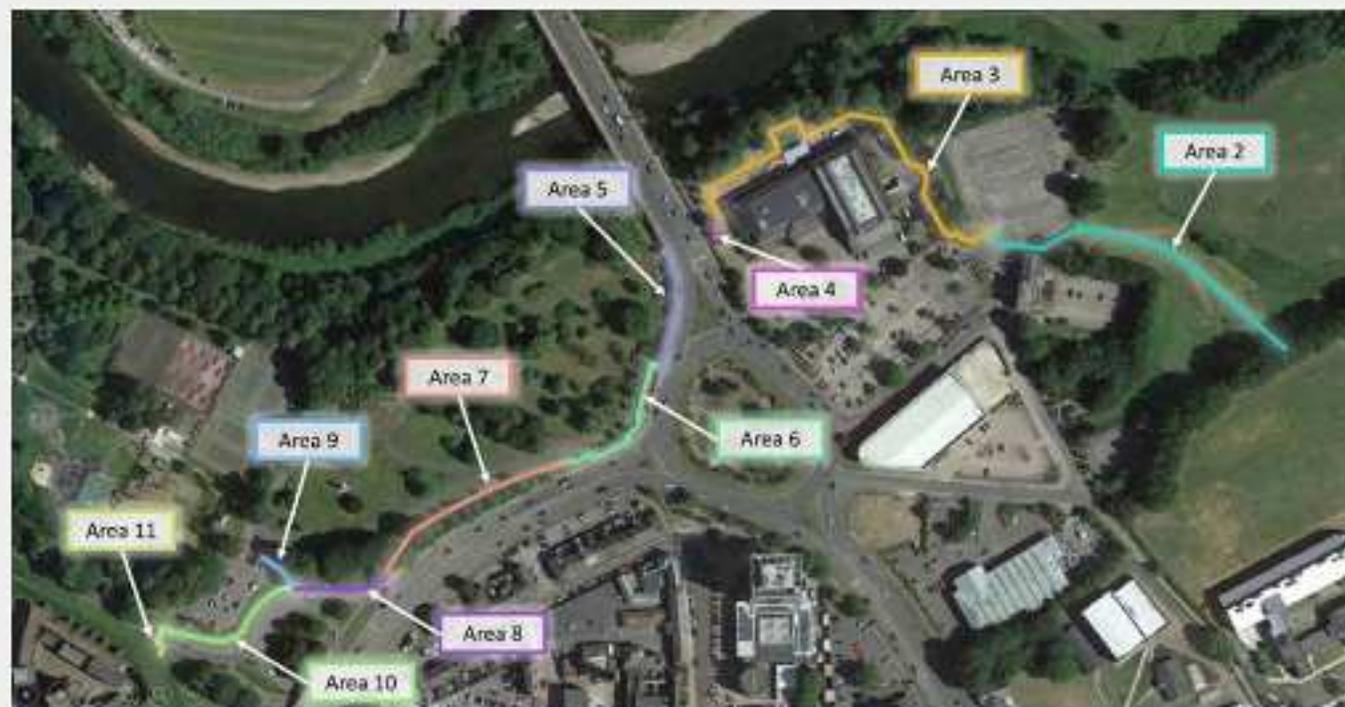
[Area 9 - Bitts Park Car Park Footpath And Wall](#)

[Area 10 - Dacre Road Embankment](#)

[Area 11 - Dacre Road Raising](#)

[Frequently Asked Questions](#)

[Contact Details](#)



A map showing the 10 areas of the Carlisle Phase 2 flood scheme

Phase 3 Current Plan



Original proposal

- Our feasibility study following 2015 floods identified an option based on improved conveyance in the River Caldeu channel and localised defence raising. As more detailed analysis of this option emerged it became apparent that it was not economically viable and there was a low confidence of achieving the target standard of protection. Furthermore, maintaining the desired standard of protection was made more difficult given climate change predictions that will increase the frequency and size of floods in the future. New guidance published this summer and based on more up-to-date climate modelling shows that, for the Eden Catchment, the rate and magnitude of this change will be greater than previously understood.

Future proposals - feasibility assessment

- In 2020 the Government updated the funding calculator for flood risk management projects and this applies to all projects started after April 2021. In light of this, we applied for funding for a feasibility study to identify a wider range of options for managing flood resilience in the Caldeu Corridor. This funding application was approved in August 2021.
- In terms of timescales for a potential scheme, we will need to go through the feasibility process and build a business case. At this early stage it is not possible to give any certainty on the viability of scheme or likely timescales.
- Phase 3 will require stakeholder and partner engagement across at a more significant scale than was the case for phases 1 and 2

An ask - Phase 3 will need to have a group of elected members to work with us on community engagement – who would they be?

Satellite schemes

- Rickerby - complete
- Gosling Sike – complete (minor landscaping remaining)
- Low Crosby – design being reviewed, delivery summer '22 subject to landowner agreement (see next slide)

Low Crosby, some detail



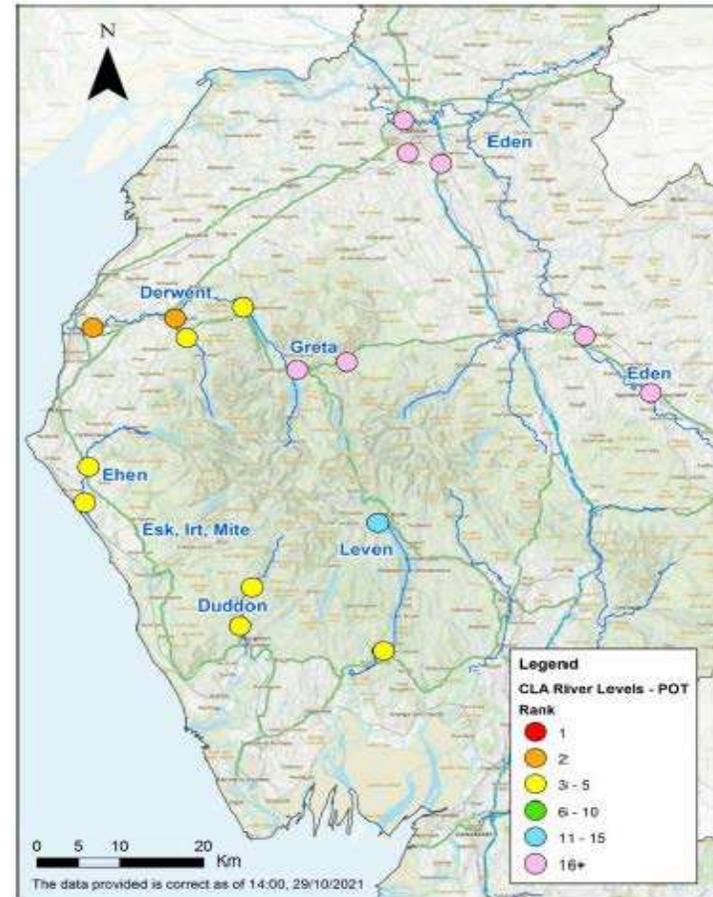
- Re-connect river to floodplain on southern bank by re-profiling existing flood embankment
- Drops river levels sufficiently to take water level below threshold levels of lowest properties in Low Crosby (reduced risk to nearly 100 properties)
- More sustainable scheme with a higher standard of protection
- Environmental benefits (via change in management of farm and new stewardship arrangements)
- Carbon savings
- No future maintenance for EA

Recent floods and performance

At Honister this event is the third largest over the 36 to 72 hour timeframe in the last 30 years (Environment Agency records extend back to 1994).

| Peak Rainfall Duration | November 2008 (mm) | December 2015 (mm) | October 2021 (mm) |
|------------------------|--------------------|--------------------|-------------------|
| 36 hour | 377 | 379 | 363 |
| 48 hour | 391 | 382 | 380 |
| 72 hour | 461 | 427 | 424 |

Table 2: Historical comparison of peak rainfall accumulation.



Significant event in the west of the County
 Whereas Honister observed over 400% of the LTA average for October in a 48 hour period the Eden catchment observed 75 – 100% at Brothers Water (wettest place in Eden catchment)
 So a less significant event in the east (indeed not in top 16 recorded annual peak river levels anywhere on the Eden – pink dots)
 No observed issues in Carlisle (or indeed in the Eden catchment)
 Some historic issues in previous storms (see Old Laundry Culvert section)

Future programme

- Parham Beck – Flood mapping indicates a potential risk in Heysham Park / Shaddongate area investigation commencing 2024/5. Rare example of a risk that hasn't been realised in the city
- Etterby Terrace – problem definition underway (we have two flood mechanisms so need to understand the relative impacts in order to understand how to progress). Small number of properties may constrain what can be delivered here
- Phase 1b
- Phase 3

Climate change, adaptation and wider catchment

- Work in the city has sustained one of the highest Standards of Protection (SoPs) in England
- Work post Desmond has helped in the short to medium term
- Can't raise defences further and SoP will erode over time
- Infrastructure resilience (for example NR are looking at resilience of their infrastructure along the River Caldw)
- Wider catchment may be where opportunities to keep pace with climate change exist
- Adaptation of the city – do we need to move certain forms of development in the medium term?
- We will be developing the flood resilience service and would highlight the need for community emergency response groups (not something we have in Carlisle city at present)
- Climate change projections (increased projected peak flows for 2080 for the Eden catchment, an increase even relative to the previous set of projections for the 'central' estimates we used in our scheme appraisal)
- <https://eip.ceh.ac.uk/hydrology/cc-impacts/>

