

Structural Review of Masterplan Proposals

<p>Duncannon Fort July 2023</p>  <p>Refer to USI Key Plan & Numbering Convention</p>	<p>Summary of structural condition, repairs required & current loading capacity</p>	<p>Proposed Use & structural alterations required</p>	<p>Additional Photos</p>
<p>1 Magazine Single-storey single-bay gable-fronted building, c.1840 Masonry barrel vaulted roof, with decorative corbels along eaves Very thick random rubble walls, roughcast to south & east Large buttresses to west elevation Solid earthen or concrete floor</p> 	<p>Fair (no access internally on day of survey) Generally in serviceable order, localised roof repairs required where slates slipped Localised repairs required to walls and floors. Vertical crack in masonry on un-rendered north gable, which will require Loose/collapsed masonry to top of buttress to west wall to be consolidated. Vegetation to south gable and partially on roof to be removed.</p> <p>Public loading (5 kN/m2) acceptable on solid floor</p>	<p>Public Building. Adequate current load capacity. No major structural alterations required.</p>	 
<p>2 Armoury Single-storey, five-bay building, c.1840, reconstructed 1939 Masonry barrel vaulted roof, stone corbel along eaves Rendered roughcast masonry walls externally, with visible tooled quoins Ancillary building to northwest with timber truss roof</p> 	<p>Fair (no access internally on day of survey) Vegetation growth in localised cracks in render to be removed and cracks filled. Significant mould growth seen internally on vaulted ceiling, requires removal and adequate ventilation to be provided. Localised repairs to walls and floors. Ancillary building: water ingress and damp patches, potential decay to roof members which require repairs/strengthening.</p> <p>Public loading (5 kN/m2) acceptable on solid floor</p>	<p>Public Building. Adequate current load capacity. No major structural alterations required.</p>	 
<p>3 Armourer's Store Single-storey five-bay building, c.1840 (originally two-storey), reconstructed 1939 Rendered roughcast masonry walls externally, dry-lined internally Steel truss roof with secondary timber structure, suspended timber ceiling</p> 	<p>Fair Roof appears in fair condition, repainting of steel trusses required. Building serviceable structurally, localised repairs may be required below existing finishes.</p> <p>Public loading (5 kN/m2) acceptable on solid floor</p>	<p>Public Building. Adequate current load capacity. No major structural alterations required.</p>	 

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Additional Photos

4 Soldier's Recreational Hall

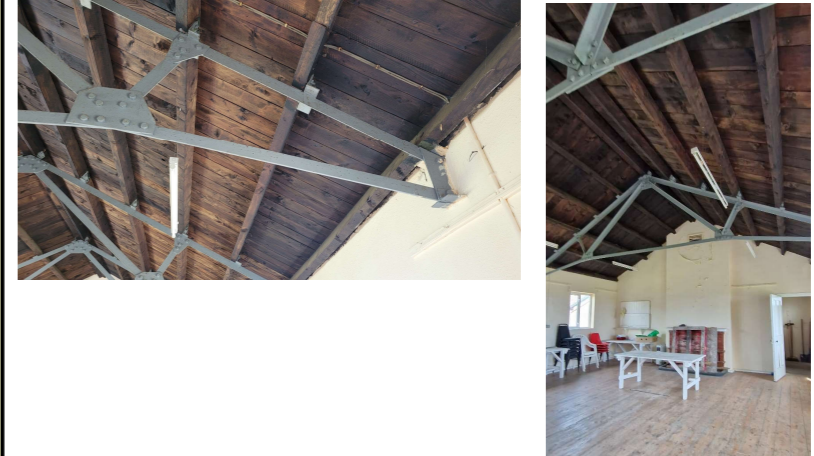
Single-storey single-cell structure c.1939
Cast concrete walls, externally rendered
Exposed steel truss roof with timber purlins
Suspended timber floor



Fair
Roof structure appears in fair condition, repainting of steel trusses required.
Timber floor sub-structure condition unknown, likely full overhaul required.
Opening-up works to the existing floor will help determine capacity.
Localised cracks in render to be repaired.

Unknown loading capacity, assume repairs/replacement required to floor to achieve public loading (5 kN/m2).

Public Building.
Likely that strengthening works will be required to floor, or a full new floor structure will be required.



5 The Officer's Mess

Five-bay two-storey building c.1840, restored 2005 & partially restored more recently
Hipped roof, large brick central chimneystack
Roughcast rendered walls
Timber floorboards on timber joists to first floor



Fair
External envelope in fair condition, despite inappropriate cement render.
Some rooms partially restored, in fair condition although dry-lining and finishes installed not appropriate and may cause issues in due course.
Leaking water tank in roof fixed but damage still remains.
Central brick chimney leaning, requires further survey and monitoring at minimum, may require significant repair works.
Poor ventilation causing mould issues.
Woodworm to timber including floorboards on ground floor.
Remedial works to ground and first floor, to include addressing ventilation and finishes issues.

**Ground floor: 5kN/m2 public loading
First floor: OK for domestic loading (1.5 kN/m2)**

Accommodation (i.e. Domestic Loading capacity)
Will need strengthening (i.e. doubling up of joists) under any new partitions on first floor.
First floor likely to require fireproofing, to detail by others.



6 The Lighthouse - owned by the OPW, outside of scope of project



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7 Burke's House
Three-bay two-storey concrete building c.1939
Two rendered chimneystacks
Exposed steel truss roof with timber purlins over
Timber floorboards on timber joists to ground and first floor



Poor
Water ingress and potential decay to roof timber elements
Floorboards missing locally, potential decay to structure below
Localised repairs/strengthening required to timber roof/floor structure
Timber trusses in need of repainting at minimum
Concrete door head compromised, potentially removed in past
Localised repairs required to concrete elements

Ground and 1st floor: domestic loading only if repairs carried out

None - likely to be demolished.
If retained, repairs required to ground and first floor to achieve anything above domestic loading.



8 Burke's House - Store Houses
Roofless ruinous building abutting Burke's House, date unknown
Rubble masonry walls with fallen rubble internally
Lean-to roof (collapsed/missing)



Poor
Storehouses in poor condition due to lack of roof.
Upstanding masonry walls in reasonable condition, though vegetation growth on wall tops and on crevices, which should be removed.
Cementitious plaster and render on wall faces, which should be removed.
Any open/degraded mortar joints should be deeply repointed

Public loading (5 kN/m2) on solid floor.

No use identified currently.
Full new roof structure required if required as habitable space.



9 Governor's House
Eight-bay two-storey over basement c.1840, reconstructed 1943
Hipped slate roof on timber structure
Rendered roughcast masonry walls and chimneystacks
External cast concrete stairs



Fair
External envelope in fair condition, despite inappropriate cement render.
Timber roof structure appears in sound condition.
Water ingress on some walls due to leaks.
Localised repairs/strengthening required to first floor joists.
Concrete escape stairs to both gable ends in remarkably good condition but require local repair.
Suspended timber floors to first floor, some joists in need of splice repairs to decayed ends.
Ground floor may be vaulted masonry construction.
If suspended timber, repairs more than likely required.
Unknown basement construction or condition.
Opening-up works to ground floor/basement will help determine capacity.

Ground floor: assume public loading possible due to previous use, with repairs required (to be verified by opening-up works)

First floor: OK for domestic loading (1.5kN/m2) once repairs carried out.

Public Building.
Ground floor: if masonry vaults below, no strengthening required, subsequent to condition.
Strengthening works likely required otherwise.
First floor: strengthening works required, likely to include insertion of steel beams to shorten span of joists, doubling up joists under any new partitions, trimming out around stairways.
External gable end stairs can take full public loading but unlikely meet current escape criteria re: widths and balustrade heights.



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10 Officer Barrack
Five-bay two-storey c.1840 reconstructed 1939
Hipped slate roof on timber structure
Rendered roughcast masonry walls and chimneystacks
Curved single-storey wall linking buildings 10 and 11
First floor connected to Beach Rampart to rear via external bridges



Fair
External envelope in fair condition, despite inappropriate cement render.
Timber roof structure appears in sound condition.
Localised damp patches to walls and floor.
Localised repairs/strengthening required to first floor joists.
Curved linking wing showing significant signs of deterioration/movement.

Ground floor: Public loading (5 kN/m2) on solid floor.
First floor: OK for domestic loading (1.5kN/m2) once repairs carried out.

Public Building.
Ground floor: no strengthening required.
First floor: strengthening works required.
Strengthening works to floors likely to include insertion of steel beams to shorten span of joists, doubling up joists under any new partitions, trimming out around stairways.



11 Soldier Barrack
Three-bay two-storey building c.1840 reconstructed 1939
Hipped slate roof on timber structure
Rendered roughcast masonry walls and chimneystacks
Curved single-storey wall linking buildings 10 and 11



Fair
External envelope in fair condition, despite inappropriate cement render.
Timber roof structure appears in sound condition.
Localised damp patches to walls and floor.
Localised repairs/strengthening required to first floor joists.

Ground floor: Public loading (5 kN/m2) on solid floor.
First floor: OK for domestic loading (1.5kN/m2) once repairs carried out.

Ground floor: Retail/workshop.
No strengthening required.
First floor: Accommodation.
Will need strengthening (i.e. doubling up of joists) under any new partitions on first floor.
First floor likely to require fireproofing, to detail by others.



12 Soldier Barrack
Six-bay two-storey building c.1840 reconstructed 1939
Hipped slate roof on timber structure
Rendered roughcast masonry walls and chimneystacks
First floor connected to Marina Rampart to rear via external bridges



Fair
External envelope in fair condition, despite inappropriate cement render.
Timber roof structure appears in sound condition.
Localised damp patches to walls and floor.
Localised repairs/strengthening required to first floor joists.

Ground floor: Public loading (5 kN/m2) on solid floor.
First floor: OK for domestic loading (1.5kN/m2) once repairs carried out.

Ground floor: Retail/workshop.
No strengthening required.
First floor: Accommodation.
Will need strengthening (i.e. doubling up of joists) under any new partitions on first floor.
First floor likely to require fireproofing, to detail by others.

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13 Barrack Store
Five-bay two-storey building c.1840 reconstructed 1939
Hipped slate roof on timber trussed roof structure
Rendered roughcast masonry walls and chimneystacks




Fair
External envelope in fair condition, despite inappropriate cement render.
Timber roof structure appears in sound condition.
Localised damp patches to walls and floor, plaster spalling locally.
Localised repairs/strengthening required to first floor joists.

Ground floor: Public loading (5 kN/m2) on solid floor.
First floor: OK for domestic loading (1.5kN/m2) once repairs carried out.

Ground floor: Retail/workshop.
No strengthening required.
First floor: Accommodation.
Will need strengthening (i.e. doubling up of joists) under any new partitions on first floor.
First floor likely to require fireproofing, to detail by others.



14 Laneways
Partially cobbled lane adjacent to building 12
Bridges connecting building 12 to rampart




Fair
Bridges connecting building 12 to rampart in fair condition, localised repairs to masonry spandrel walls and parapets
Cobbled surface priarily intact, some vegetation growth t be removed

Public loading (5 kN/m2) on solid floor.



15 Toilet Block
Single-storey concrete building, assumed c.1939-1943 or more recent
Shallow pitch asbestos slate roof




Fair
Externally - fair condition, localised damp patches to base of walls
Internally - no access for survey

Public loading (5 kN/m2) on solid floor.




16 Parade
Open plan tarmacked area, surrounded by buildings predominantly facing inwards



Fair
Tarmacked surface in fair condition - refer to Civil/Transport engineer

Public loading (5 kN/m2) on solid ground

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<p>17 South Battery Masonry walls forming boundary to sea, date unknown</p> 	<p>Fair condition Localised repairs/repointing to masonry</p>		
<p>18 Ditch & Rampart (Dry Moat) High masonry walls to each side of moat Decorative string course near top Grassed moat</p> 	<p>Fair condition Vegetation growth to walls, particularly vigorous at high level Localised repairs to masonry once vegetation removed</p>		
<p>19 South Lunette Curved semi-circular brick single-storey structure, date unknown Cementitious rounded cap to parapet wall Arrow-slit windows</p> 	<p>Fair condition Spalled bricks require repair Cement cap requires replacement with more appropriate lime cap</p>		
<p>20 North Lunette Curved semi-circular brick single-storey structure, date unknown Cementitious rounded cap to parapet wall Arrow-slit windows</p> 	<p>Fair condition Spalled bricks require repair Cement cap requires replacement with more appropriate lime cap Recently fallen portion of wall repaired, in good condition</p>		

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21 Tower
Square roofless ruinous masonry structure, date unknown



Poor
Significant vegetation growth to tops and sides
Collapsing window head to east
Breach to west infilled with blockwork



22 West Battery - Sunken Pill Box
Single-storey cast concrete structure with flat concrete roof, c.1939-1943
Solid concrete floor with trenches
Curved metal sliding shutters to sea-facing side
Accessed via concrete steps from ground level



Fair
Concrete structure in reasonable condition
Metal shutters badly corroding
Surrounding earlier masonry structure requires consolidation



23 Gun Rings
Masonry retaining walls forming rounded bases for guns, date unknown
Iron gun base built into ground



Fair
Brickwork in fair condition
Vegetation growth to wall tops
Degraded brick to rear of northern ring, requires local consolidation

24 Munitions Store
Single-storey masonry building, date unknown
Dressed stone externally, brick liner walls internally
Vegetation growing on flat concrete roof, possibly intended as an earthen roof



Poor
Concrete roof structure to be investigated further internally, may require localised repairs.
Brick liner walls internally partially collapsed/dismantled, requires consolidation
Mortar washout externally, requires repointing



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25 Generator Room
Single-storey cast concrete building c.1939-1943
Concrete downstand beams supporting flat concrete roof
Large rusting machines occupying much of floor area



Poor
Concrete roof deteriorating, cracks in roof covering, water ingress and vegetation growth
Possible presence of asbestos in machinery TBC



26 West Battery
Single-storey cast concrete structure with flat concrete roof, c.1939-1943
Solid concrete floor
Curved metal sliding shutters to sea-facing side
Set within older masonry battery structures



Fair
Concrete structure in reasonable condition
Metal shutters badly corroding
Surrounding masonry structure requires consolidation



27 West Battery - Sea Pill box
Single-storey cast concrete structure with flat concrete roof, c.1939-1943
Solid concrete floor







Poor
Concrete structure spalling to underside (top of roof not seen)

28 Beach Rampart
Masonry retaining wall with walkway and grassed area on top
Curved round tower at south corner, unknown date
Blind brick arches below walkway



Fair
Masonry in reasonable condition, localised repairs only



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<p>29 Marina Rampart Masonry wall with walkway and grassed area on top Grassed masonry slopes leading to parapet wall Blind brick arches below walkway</p> 	<p>Fair Masonry in reasonable condition, localised repairs only</p>		
<p>30 Beach Glaci Grassed area to south of main entrance, enclosed by flanking entrance masonry walls</p> 	<p>Fair Localised repairs to walls only</p>		
<p>31 Marina Glaci Grassed area to north of main entrance, enclosed by fence and retaining masonry walls Historic graveyard to north end of field</p> 	<p>Fair Localised repairs to walls only</p>		
<p>32 Telecoms Box Single-storey single-cell masonry structure, date unknown</p> 	<p>Fair (no access internally) Understood to be outside of project remit</p>		

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- 33 Circular Battery**
Single-cell pointed-roof lookout structure at apex of brick walls



Fair
Some mortar washout and vegetation growth
Localised repairs required to masonry only

- 34 Casement Battery**
Rubble masonry walls overlooking beach cliffs

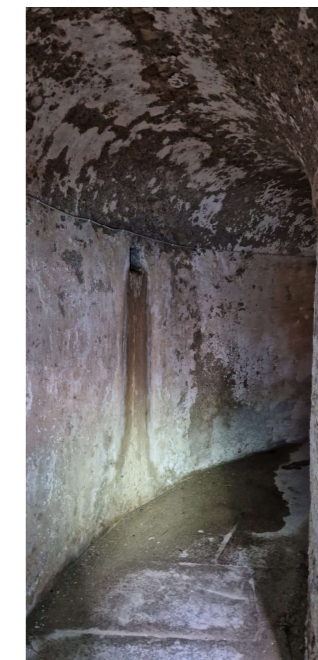
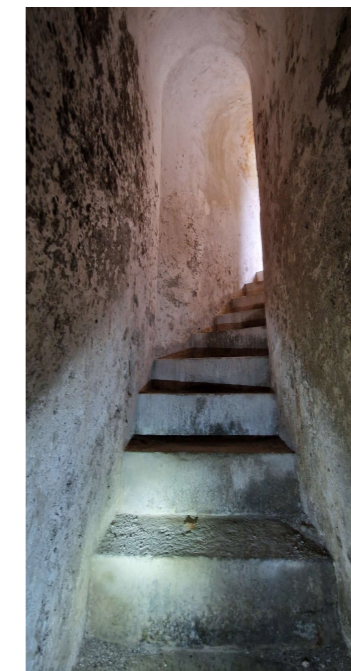


Fair
Some mortar washout and vegetation growth
Localised repairs required to masonry only

- 35 Croppy Boy Cell**
Underground multi-roomed area with vaulted masonry ceiling and walls
Lime plaster to walls and ceiling
Corbel stones to perimeter
Tiled stone floor



Fair
Lime plaster spalling but mostly intact
Solid stone floor in reasonable condition



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36 Embrasure of Southern Wall
Brick insertion into stone wall
Domed internally with slit windows



Fair
Some mortar washout and vegetation growth
Localised repairs required to masonry only



37 Bridge Entrance
Timber deck on concrete beams bearing on brick piers



Poor
Some mortar washout and vegetation growth on brick piers
Localised repairs required to masonry
Replacement deck and beams likely required (understood to be carried out under separate contract)



38 Main Entrance
Carved stone pillars at lower and upper entrance with flanking stone wall connecting both sets of pillars



Fair
Some mortar washout and vegetation growth on brick piers
Localised repairs required to masonry

