

Newport City Council
Local Development Plan

Hearing Session 20: Additional Housing Allocation (H61
– H64) and Llanwern Former Tipping Area South of
Queensway



Hearing Session 20: Additional Housing Allocations (H61 – H64)

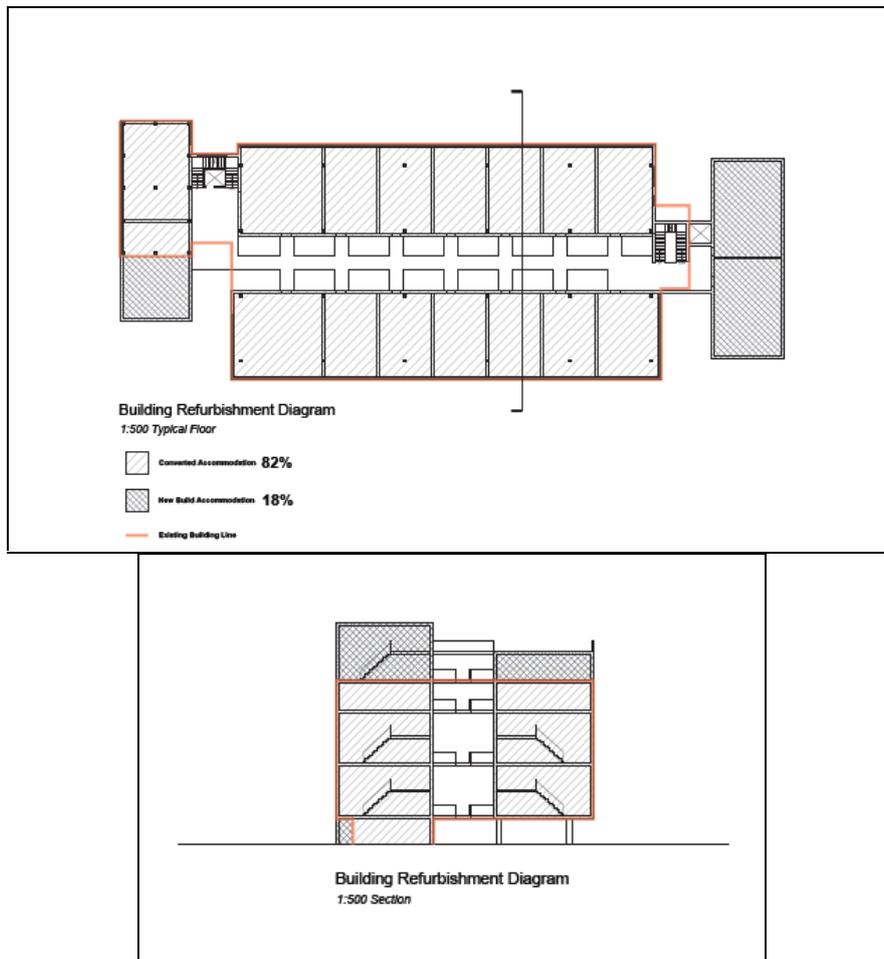
Monday 29 September 2014

i) **What evidence shows that the additional housing allocations now identified can be delivered within the Plan period?**

Postal Exchange H1(61) – 70 units

- 1.1 Pre-application discussions are underway with the developer. The proposal centres on the refurbishment of the existing building. The existing building will not be demolished, instead, it will be completely refurbished and the facades will be upgraded and modified. Therefore the developer believes that the scheme will only take 12 months to complete.
- 1.2 Figure 1A below demonstrates the scheme. The pink line shows the existing building. There will be an element of new build construction to form two wings to the building plus an extra floor will be added, but new build will only be 18% of the scheme.

Figure 1A: Building refurbishment diagram



- 1.3 The Council has allocated 70 units for the scheme, but the developer believes they can accommodate 83 units within the Postal Exchange building (which is within their control for ownership purposes). They are also in negotiations with the public house next to the Postal Exchange and have plans to demolish this building and replace it with six town houses. However, this is an aspiration. The public house is not within the control of the developer. It is important to stress that the developer has said that the acquisition of the public house is not essential to the Postal Exchange scheme and if they cannot acquire it, the main part of the scheme will still go ahead. The figure below demonstrates the scheme with the inclusion of the 6 town houses. With the 6 units, the developer believes they can accommodate 89 units on the site.

Figure 1B: Sketch of the scheme including 6 town houses



- 1.4 By the amount of work carried out, it is clear that the developer is committed to this scheme. They intend to submit a full planning application by the end of 2014. It is expected that all units will be completed by 2017. The developer sees the electrification of the Cardiff to Paddington railway (expected to be completed by 2018) as a major selling point and therefore wishes to take advantage of this benefit by completing the units in readiness for this event.
- 1.5 As noted, the Council has allocated 70 units in the Plan, but detailed information submitted by the developer suggests that up to 83 units could be accommodated within the main building and a further 6 townhouses could also be added.

- 1.6 There are few constraints associated with this site. The site is within an archaeologically sensitive area however the nature of the refurbishment project will not impact on archaeology. The site is not within a flood zone.
- 1.7 Highways have indicated that a full Transport Assessment would need to be submitted with an application. The site has an existing use as offices and this would be used as a basis of assessing any residual trip generation from the proposed use. The site is in a sustainable location adjacent to the City Centre and the Railway Station as well as having good links to the National Cycle Network. Parking levels have not yet been indicated but the provision of car parking would need to be fully assessed taking into account the sustainable location of the site. Secure cycle parking will also be required to enhance options for multi-modal travel. In terms of the capacity of the network to accommodate the residual trips no insurmountable problems are envisaged and the scope of the Transport Assessment will need to be agreed with Officers prior to a submission.

Queens Hill School H1(62) – 92 units (4.4ha)

- 1.8 An outline planning application (14/0386) has been submitted to the Council. It is expected to go to Planning Committee for determination before Christmas.
- 1.9 There are local resident and Ward Member objections with regard to the transport implications but the Council's officers do not believe these concerns are insurmountable and are not major obstacles to development. The Highway Officer comments on this application are available to view in Appendix 1.
- 1.10 On the proviso that the outline planning application is approved, the agent intends to submit a reserved matters application promptly. The Council has previously noted that it expected the site to be complete within 5 years of commencement, however the planning agent believes the whole site could be completed within 2.5 years of commencement. They have provided a phasing plan with their planning application which indicates a 3 phase approach:

Phase 1:

- Tree Protection zones laid out and fenced;
- Demolition of Pupil Referral Unit building and clear up of site;
- Formation of new access into site;
- Formation of temporary school drop off and collection area;
- Relocation of 'trim trail' (school outdoor fitness equipment);
- 35 residential dwellings;

Phase 2:

- Completion of spine road;
- 35 residential dwellings;
- Formation of sports pitch and playground/ drop off and collection area.

Phase 3:

- 22 residential dwellings;
- Layout open space/landscaping areas;
- Formation of existing residents' parking area

- 1.11 The planning application is submitted by the owner of the majority of the site. The remainder of the site belongs to the Council. The development will consist of 2, 3 and 4 bedroom houses and flats.
- 1.12 In terms of constraints, there are no Tree Preservation Orders on site, but a number of trees are considered to be worthy of retention by the Council's Tree Officer. These are not considered to prejudice site delivery, and have been considered alongside the indicative site layout which shows that the site can accommodate 92 dwellings comprising a mix of detached, semi-detached and terraced houses and a small number of apartments (up to 3 storeys in height) indicated as being for over 55s. The site is within close proximity to a listed building (Shire Hall). Neither of these issues is considered insurmountable.
- 1.13 The site is not within a flood zone and has no other significant constraints.

Telford Depot H1(63) – 60 units

- 1.14 The Telford Depot has been identified by the Council's Strategic Asset Management Group for disposal as part of the Council's property disposal scheme. It is expected to be disposed of and demolished by 2019. The Council's Property Service is in the process of transformation and is now run as a joint venture with a company called Norse. Norse is based at the Telford Depot and has a 5 year lease from the Council with a break clause after year 3. Once this lease expires, proceedings will commence to demolish and dispose of the site.
- 1.15 The Council has already started to relocate some of its services from the Telford Depot. The following table is an extract from the Council's Capital Programme. It gives an example which shows the Council is in the process of relocating its refuse collection services from the Telford Depot to another site.

| Scheme | Budget 2013/14 £000's | Actual 2013/14 £000's | Notional Charges £000's | Forecast Outturn £000's | Variance £000's | Comment on scheme progress to date | Year scheme approved |
|---|--------------------------|--------------------------|----------------------------|----------------------------|--------------------|--|----------------------|
| Refuse Collection Operation Move from Telford Depot to Waste Disposal Site. | 1,048 | 732 | | 1,048 | 0 | Works are substantially complete. Full spend is anticipated this financial year. | 12/13 |

Full Capital Programme available at:

<http://www.newport.gov.uk/stellent/groups/public/documents/report/cont719829.pdf>

- 1.16 The site is expected to be disposed of and demolished by 2019. The whole site would be completed by the end of 2022.
- 1.17 In terms of constraints, there is an underground fuel tank which is used to refuel Council vehicles. Therefore this contamination will need to be treated accordingly. The site is also within a C1 flood risk area. The Council has commissioned a Strategic Flood Consequence Assessment (SFCA) for the site which demonstrates that the scheme is acceptable with a combination of land raising and setting of finished floor levels to provide mitigation over the development lifetime. The Stage 3 SFCA is available to view in Appendix 2.

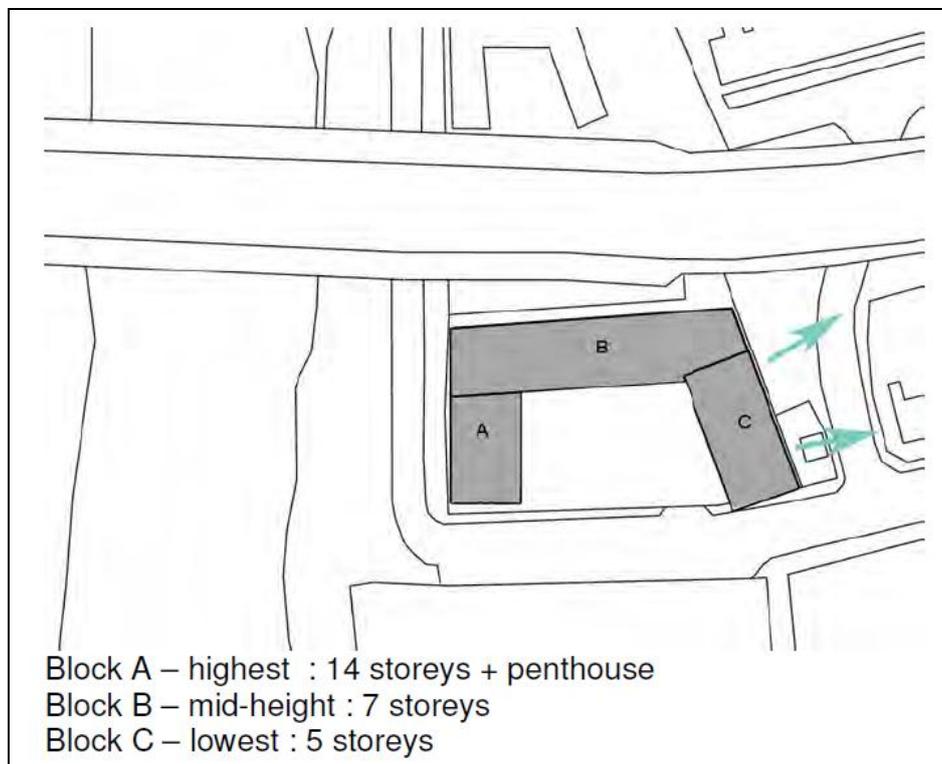
Uskside Paint Mills H1(64) – 53 units (0.2ha)

- 1.18 The developer of Uskside Paint Mills is committed to bringing the site forward. Their previous planning application (12/0666) for 77 apartments was recently refused by the Council solely on the grounds of design. The one reason for refusal on the decision notice read:

The potential scale and massing of the building will have an adverse effect on existing residents by reason of overshadowing and overlooking and will represent a stark change in the scale and massing of buildings within the immediate area, to the detriment of the visual quality of the street scene. The development would be contrary to Policies SP1, SP2, CE31, CE38, CE39 of the Unitary Development Plan, 1996-2011 (Adopted May 2006) and the Council's Supplementary Planning Guidance for Residential Design Guide.

- 1.19 Planning Committee was concerned about the impact of the proposed 14 storey building on its surroundings. Figure 1C below shows the proposed 14 storey tower as Block A.

Figure 1C – Block Diagram, Uskside Paint Mills



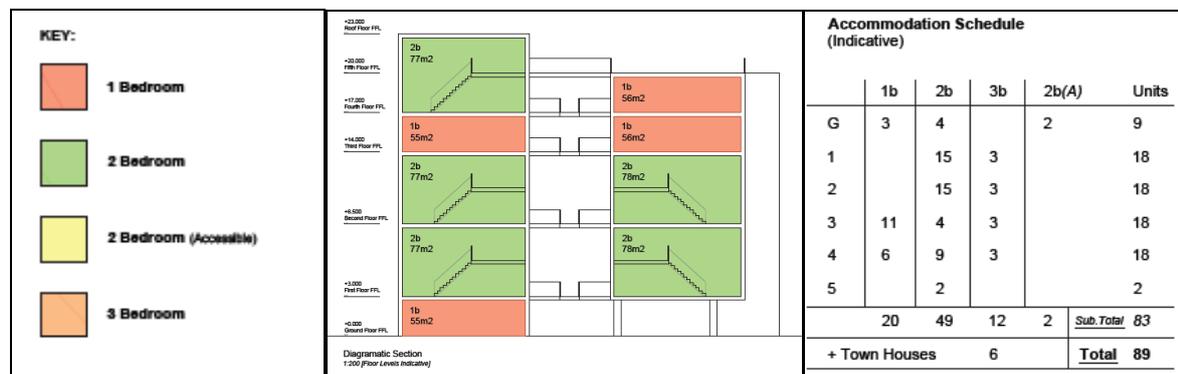
- 1.20 Officers have discussed the scheme with Planning Committee and the Ward Members following the decision to refuse the planning application. The redevelopment of this vacant and derelict site is welcomed in principle, and Members are comfortable with a seven storey building on site. On this basis, they were happy for officers to add the site to the LDP but with a reduced housing unit number of 53 units.
- 1.21 Officers have been in discussion with the developer of the site. The developer has confirmed that they are happy with the scheme being added to the LDP, although they may seek to appeal the decision to refuse the scheme for 77 units. If the developer lodges a successful appeal, then this will provide additional units over and above the LDP allocation. If not, they will still have the site within the LDP for 53 units. Therefore they feel they are in a strong position to deliver the site within the Plan period.
- 1.22 In terms of constraints, the site is a former paint works and there are some contamination issues that will need to be addressed. There are no flood risks associated with this site and Natural Resources Wales are satisfied with the proposal to build on this area of land. The site is adjacent to the Grade 2* George Street Bridge, which is listed for its engineering interest. The Council's Conservation Officer had no objections to the previously proposed 14 storey block.
- 1.23 Once outline permission is approved, it is expected that a reserved matters application will follow in quick succession. Commencement is expected in 2017 and the whole site is anticipated to be completed by 2021.

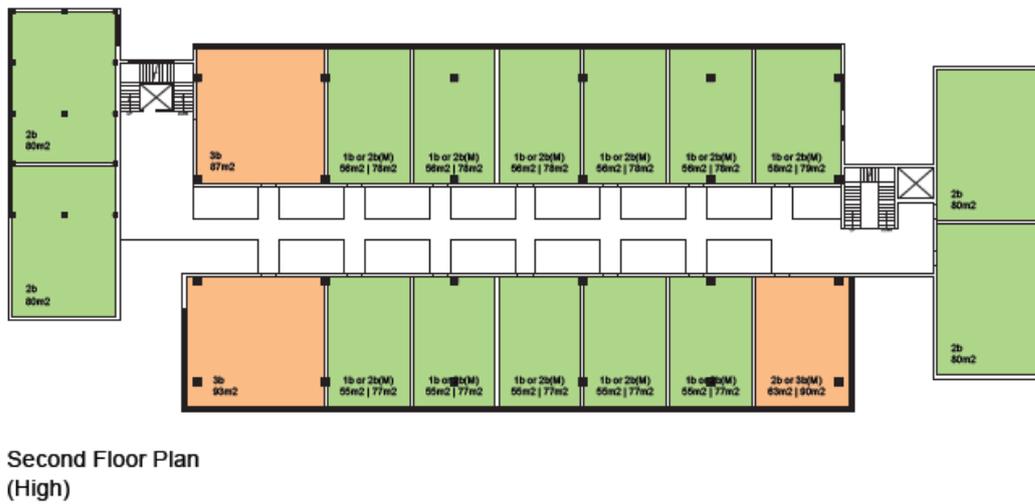
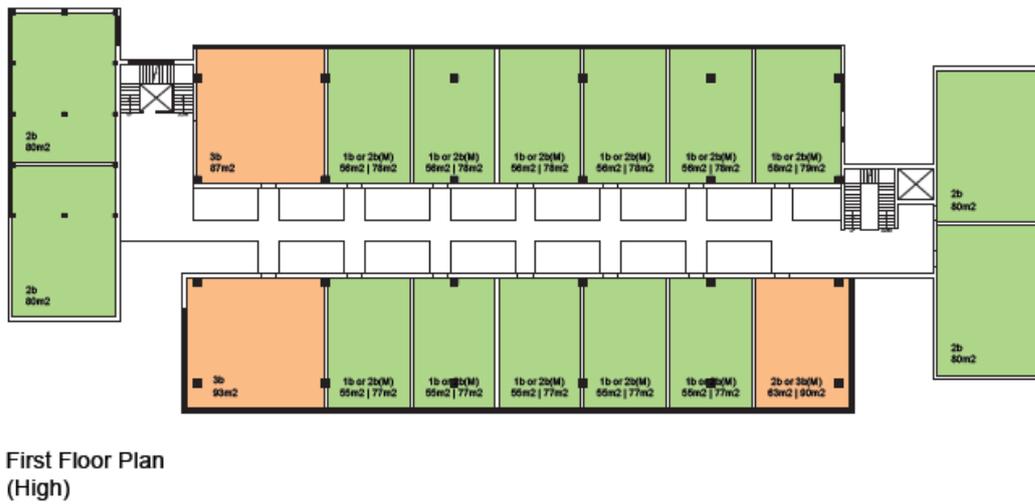
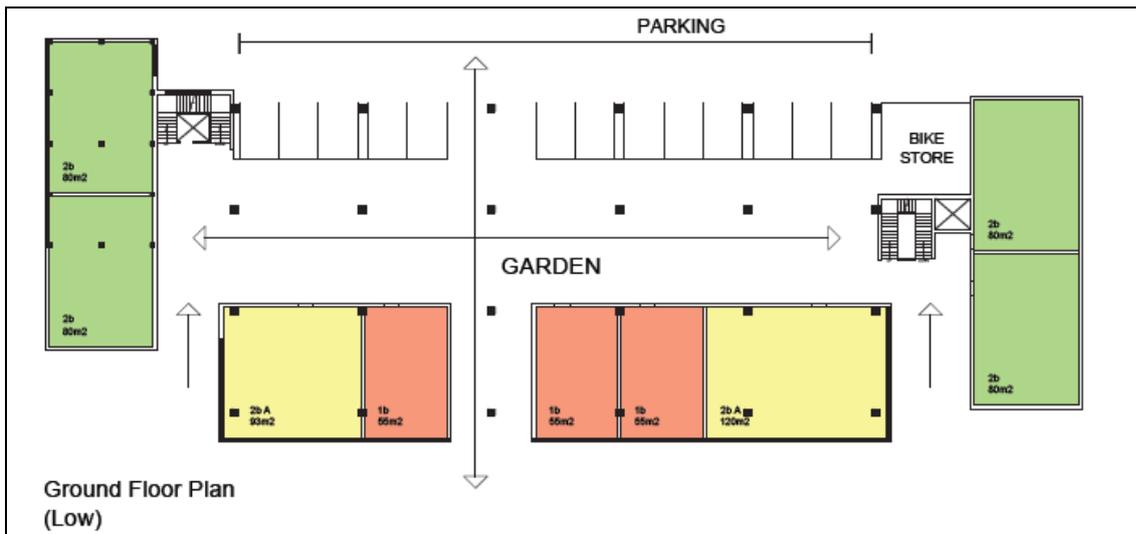
ii) **On what basis have the respective capacities of the proposed additional housing sites been estimated? Are these estimates realistic?**

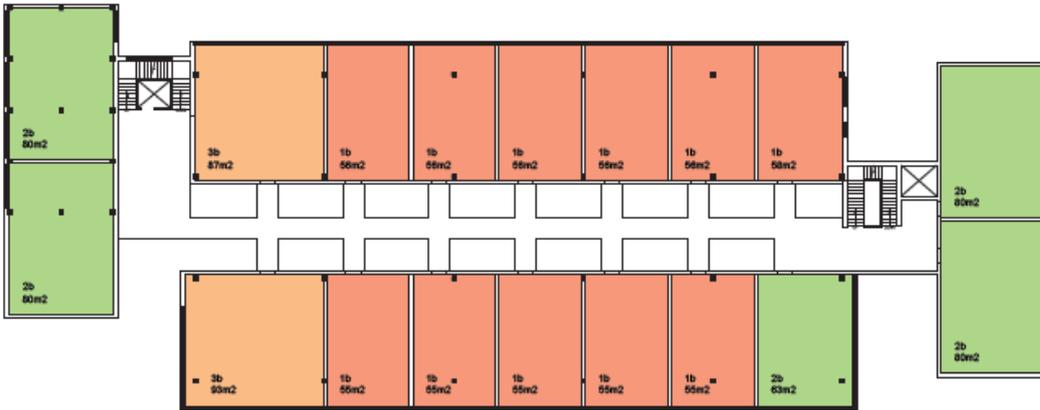
Postal Exchange H1(61) – 70 units

- 2.1 It is acknowledged that the density of the Postal Exchange scheme is high at approximately 350dph, but the Council believes it is entirely appropriate for a city centre scheme in close proximity to Newport Railway Station. As the scheme primarily involves the retention, refurbishment and conversion of the existing six storey building, the density is somewhat already set. The developer has provided the following plans to demonstrate how they intend to accommodate 83 units. Therefore the density is based on detailed drawings which give a realistic estimate.

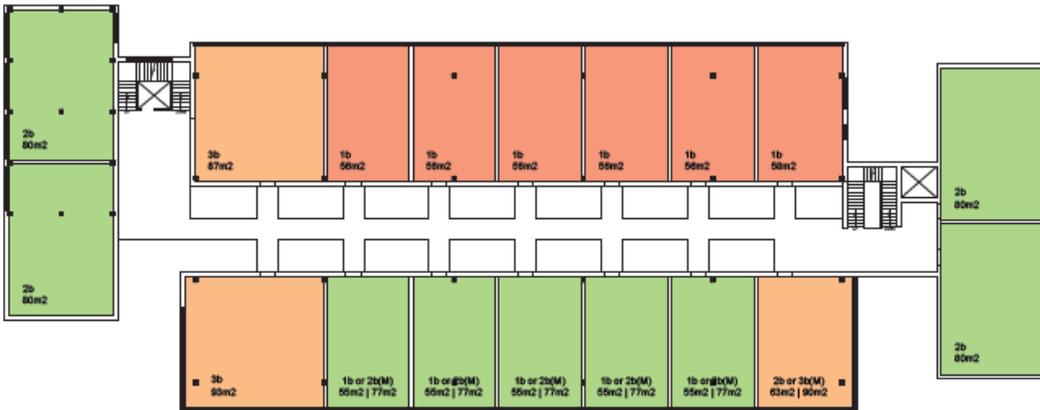
Figure 2A: Proposed residential layout for Postal Exchange



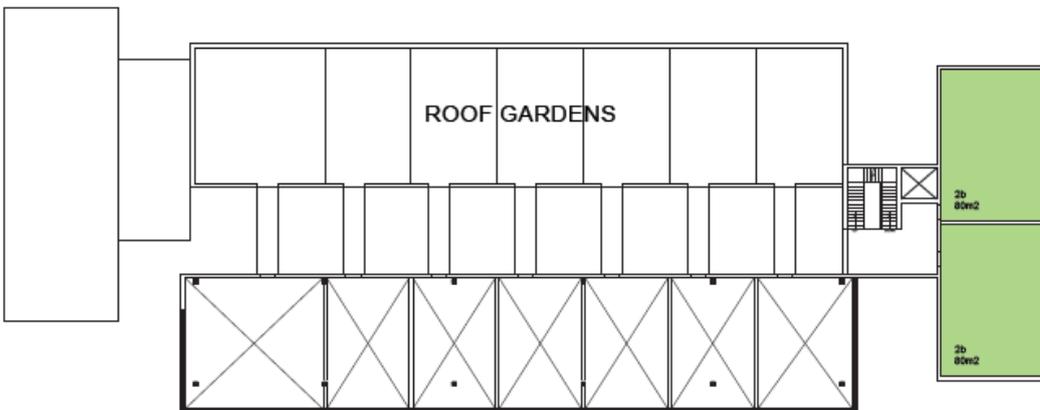




Third Floor Plan
(Low)



Fourth Floor Plan
[Additional Level]



Fifth Floor/Roof Plan
[Additional Level]

Telford Depot H1(63) – 60 units

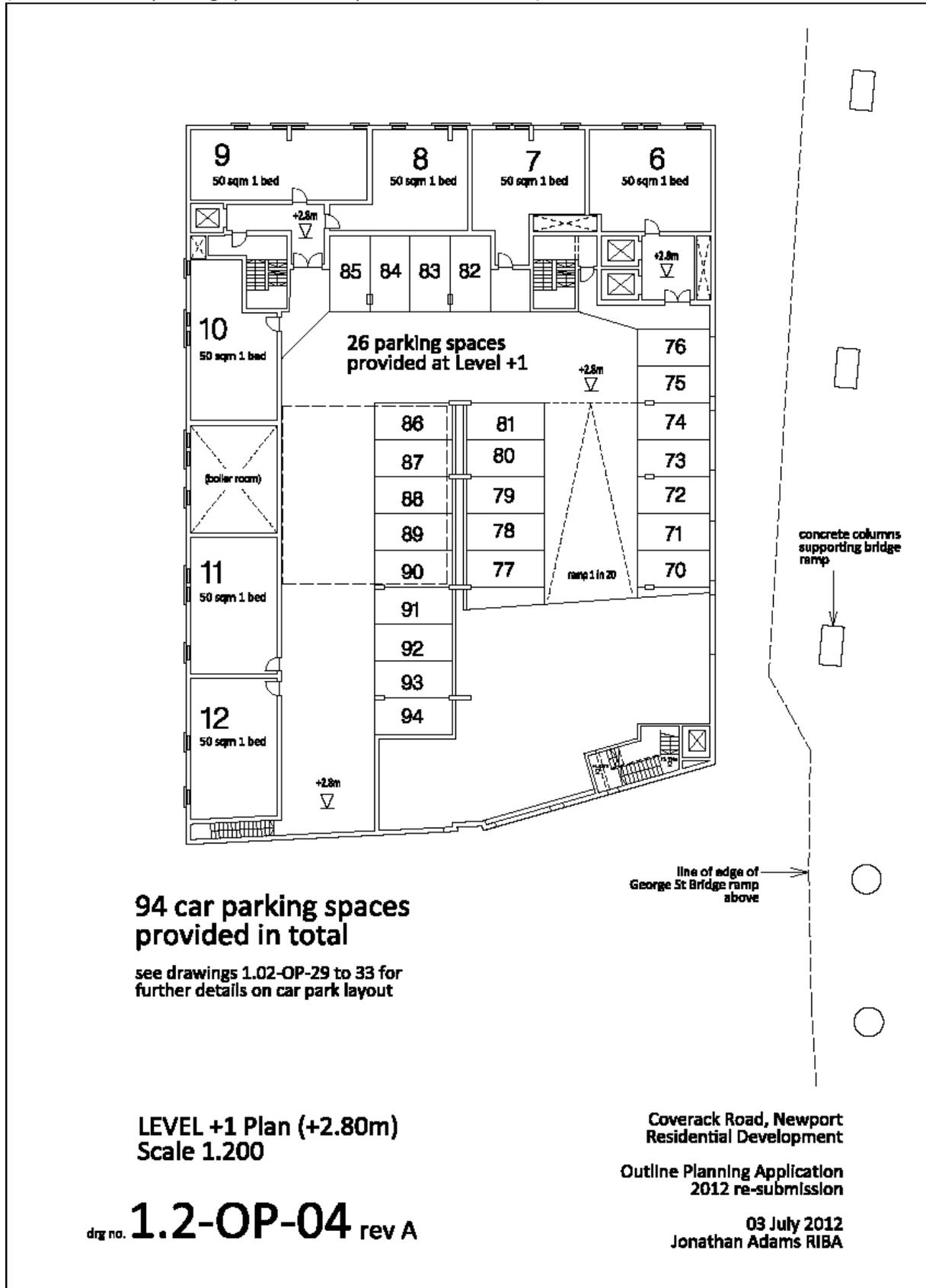
- 2.3 There are currently no plans drawn up for residential development on the Telford Depot as it is acknowledged that the scheme is currently at a strategic level. However, the site is adjacent to allocation H1(4) Pirelli which has outline permission for 'up to 250 dwellings' and a reserved matters application (14/0704) for exactly 250 dwellings is currently with the Council for determination. The size of the Pirelli site is 6.5ha¹. Therefore the density on the Pirelli site is just over 38 dwellings per hectare.
- 2.4 The size of the Telford Depot is 1.6ha and at a density of 38 dwellings per hectare, would accommodate 60 dwellings. The Council considers that a scheme similar in density to that of the Pirelli site would be entirely appropriate for the neighbouring Telford Depot, and this is how the number of dwellings expected at Telford Depot has been derived at.

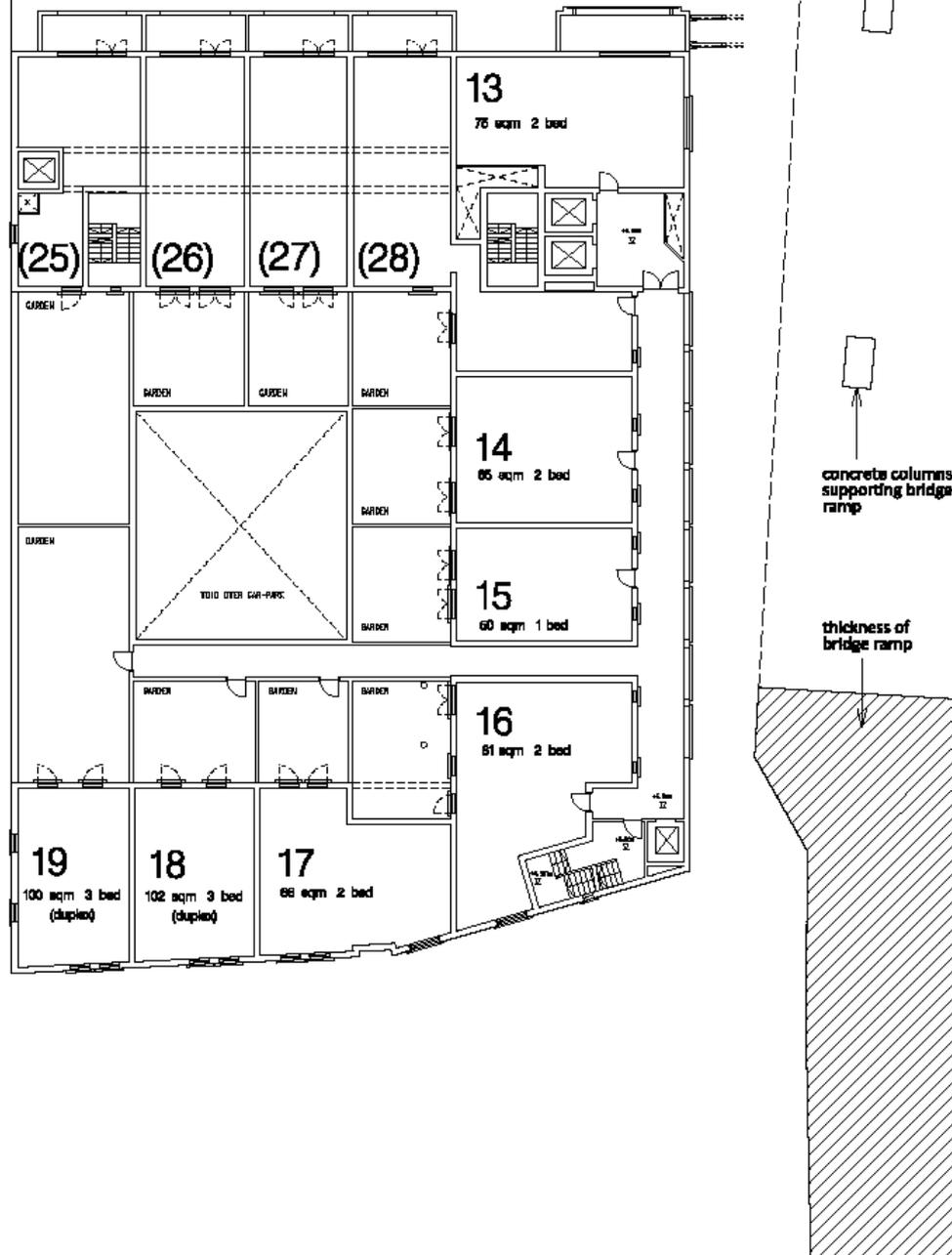
Uskside Paint Mills H1(64) – 53 units (0.2ha)

- 2.5 As noted above, the developer has attempted to accommodate 77 units on this site, however this did include a 14 storey building. If the 14 storey building is reduced to 7 storeys, this would accommodate 61 units on the basis of the plans for the application 12/0666. The Council has been cautious in its assessment and chosen to allocate 53 units as the developer may wish to redesign the internal layout as a result of the height reduction of 14 storey building, however, all indications suggest that the developer is keen to maximise the number of units on the site and a resubmission is likely to be around the 60 unit figure. The plans below demonstrate that the site can accommodate 61 units.

¹ Please note that the size of Pirelli is incorrectly noted as 10.5ha in the LDP Submission Version. 6.5ha is the correct size.

(Please note 38 parking spaces will be provided at Level -1)



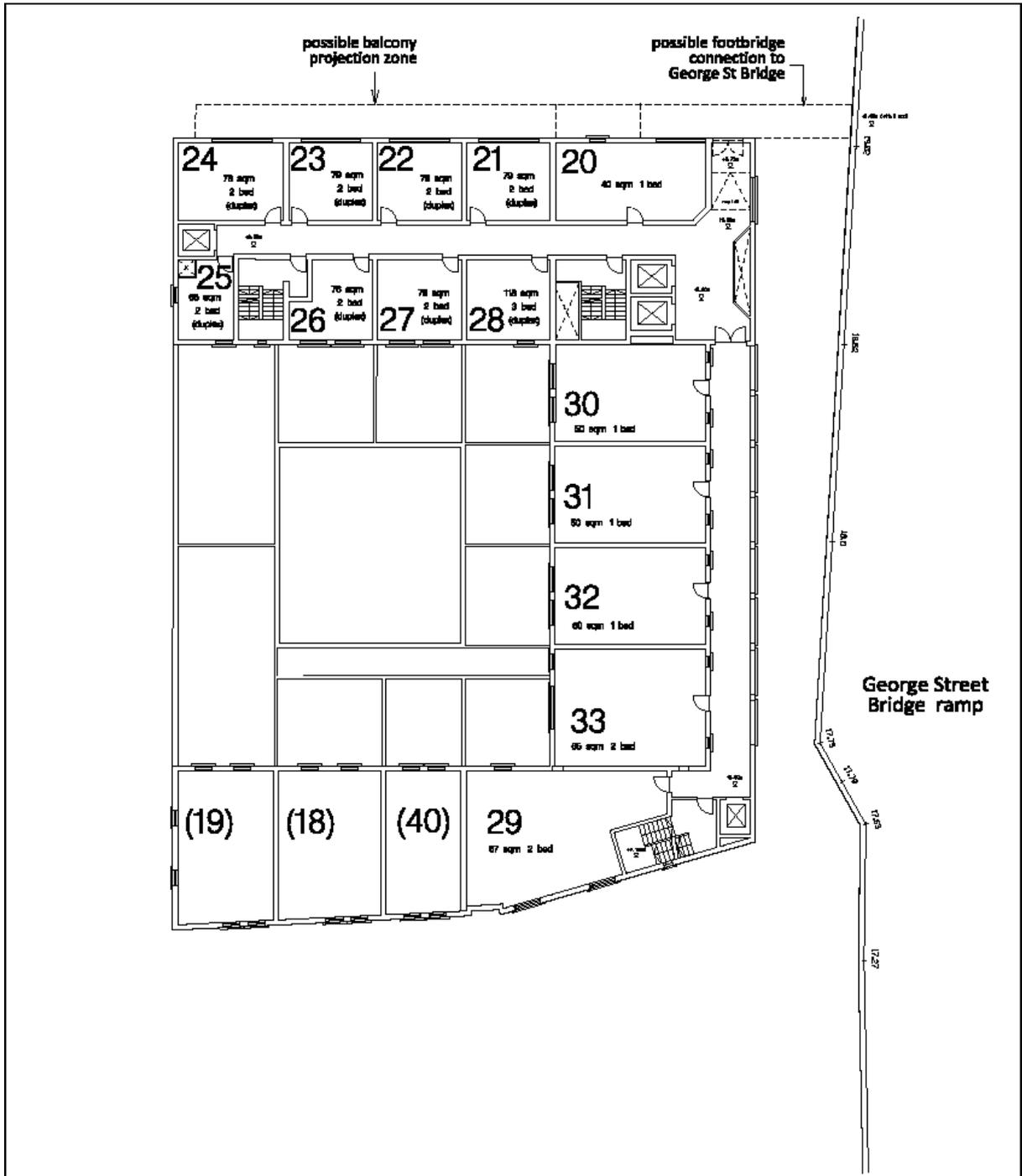


LEVEL +2
Outline Plan (+5.60m)
Scale 1.200

Coverack Road, Newport
Residential Development
Outline Planning Application
2012 re-submission

drg no. **1.2-OP-05**

03 July 2012
Jonathan Adams RIBA

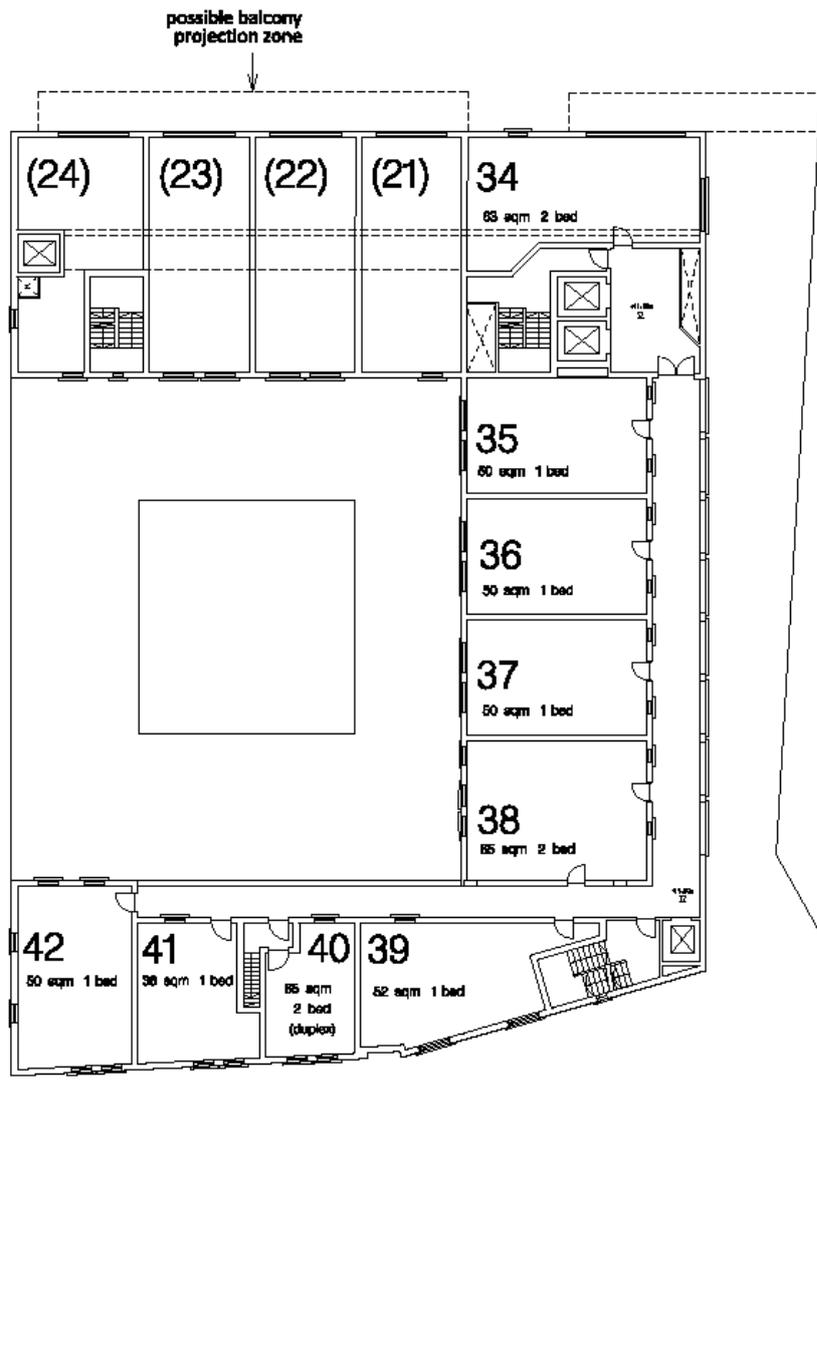


LEVEL +3
 Outline Plan (+8.60m)
 Scale 1.200

Coverack Road, Newport
 Residential Development
 Outline Planning Application
 2012 re-submission

drg no. **1.2-OP-06**

03 July 2012
 Jonathan Adams RIBA



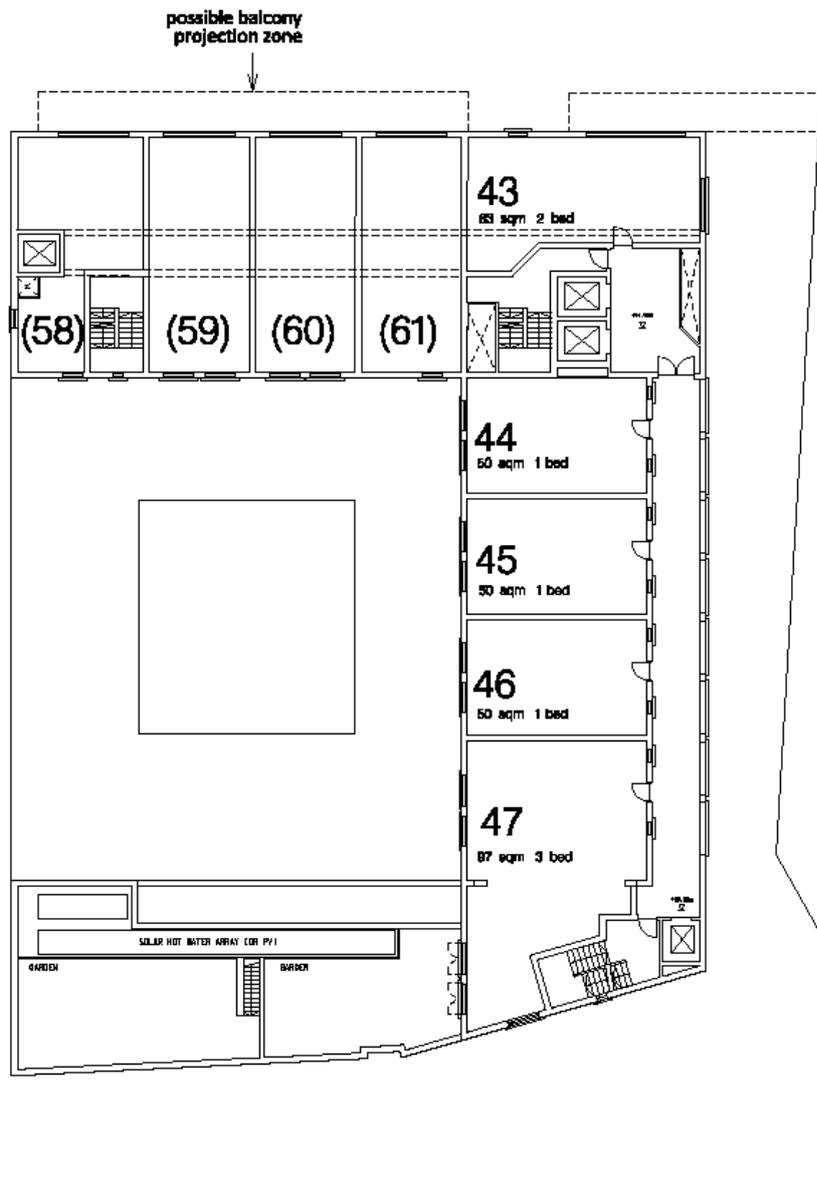
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Coverack Road, Newport
Residential Development

Outline Planning Application
2012 re-submission

drg no. **1.2-OP-07**

03 July 2012
Jonathan Adams RIBA



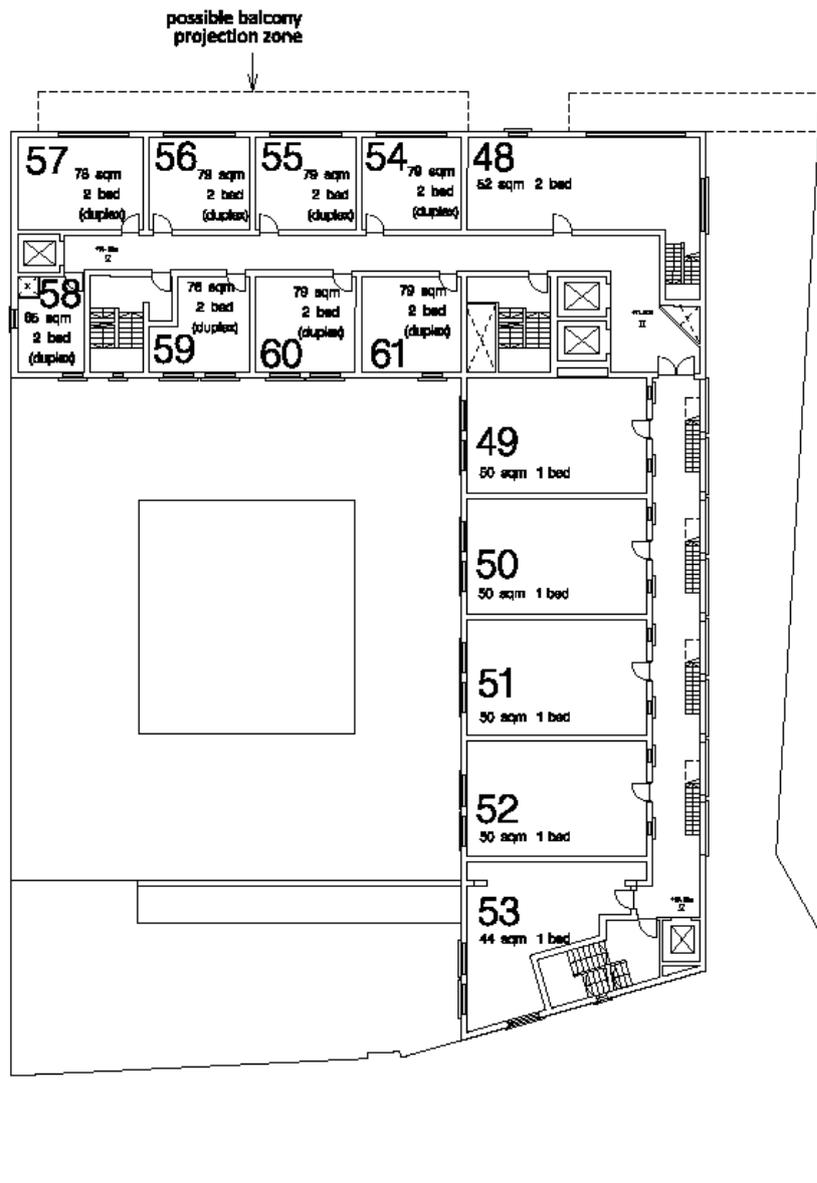
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Scale 1.200

Coverack Road, Newport
Residential Development

Outline Planning Application
2012 re-submission

drg no. **1.2-OP-08**

03 July 2012
Jonathan Adams RIBA



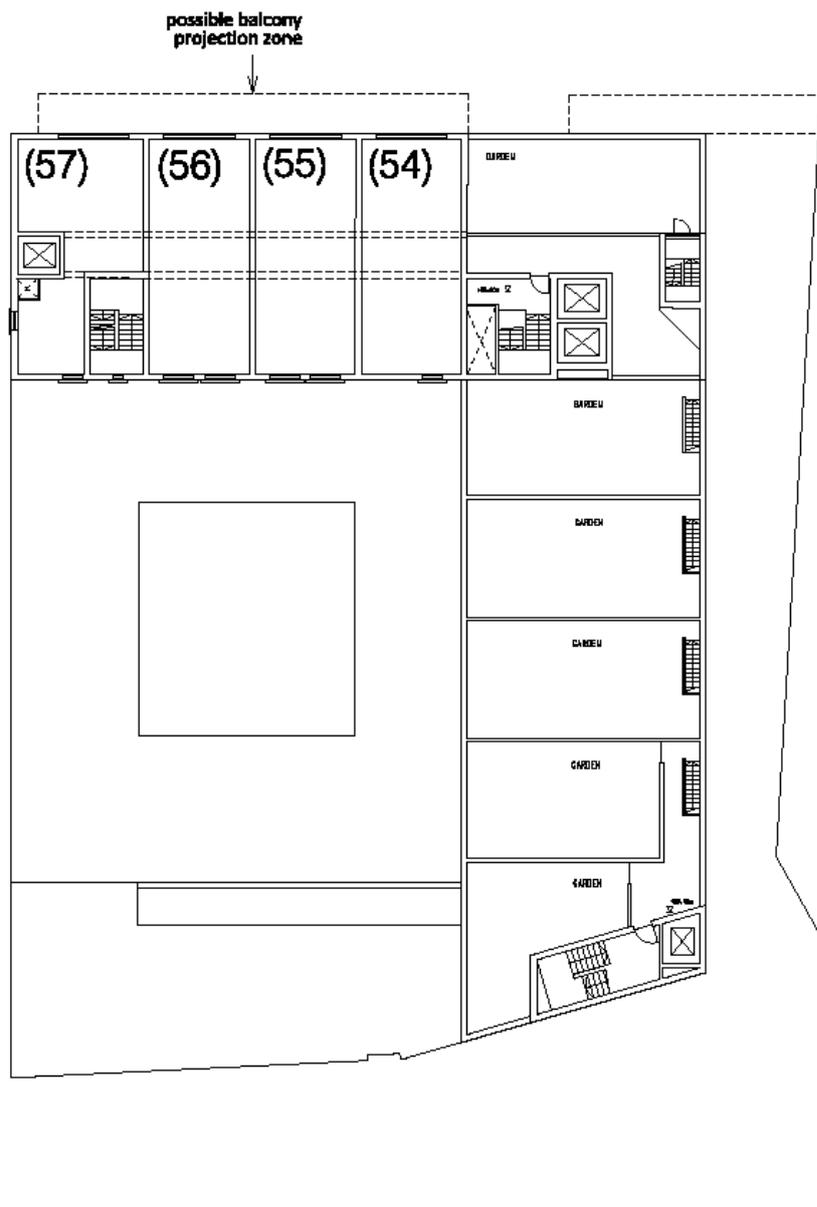
LEVEL +6
Outline Plan (+17.60m)
Scale 1.200

Coverack Road, Newport
Residential Development

Outline Planning Application
2012 re-submission

drg no. **1.2-OP-09**

03 July 2012
Jonathan Adams RIBA



LEVEL +7
Outline Plan (+20.60m)
Scale 1.200

drg no. **1.2-OP-10**

Coverack Road, Newport
Residential Development

Outline Planning Application
2012 re-submission

03 July 2012
Jonathan Adams RIBA

iii) Does the identification of these sites as housing allocations undermine the Council's reliance on a windfall housing contribution of 95 dwellings per annum during the remaining years of the Plan?

- 3.1 The Council is confident it can achieve an average of 95 units per annum over the Plan period in addition to the 275 units allocated in the additional 4 sites. Windfall sites over the 7 year period 2006/07 – 2012/13 provided 990 completions resulting in an average annual contribution of 141 units per annum. An average of 95 units per annum is therefore considered to be a conservative estimate that is achievable over the Plan period.
- 3.2 As previously discussed, the Council has been successful in securing £14.8 million funding as part of the Welsh Government Vibrant and Viable Places Project (VVP). The scheme will provide approximately 125 units in addition to LDP allocations, over the next 3 years as part of an overall £60m investment. Progress is being made on the sites, with either planning consent in place or a planning application currently in for determination for 69 units. The Regeneration Section has a rolling system in place for delivery of VVP schemes to ensure that the projects are delivered over the next 3 years and the funding is spent by the March 2017 deadline.
- 3.3 In addition to VVP, planning permission has been approved subject to a S106 for 249 units at housing site H1(5) Glebelands, giving an extra 96 units to that allocated in the LDP, and a further 10 units has been approved on a site in Crescent Road. A further 37 units are currently being considered by Development Management and are anticipated to be reported to Planning Committee during the autumn. These potentially provide a further 143 units to the windfall land supply. Combined, the VVP sites and other known windfall sites potentially contribute approximately 270 units to the land supply in the next 3 – 4 years.
- 3.4 Based on previous past build rate experience, smaller scale windfall developments of 50 units or less are considered to continue to be the most common form of windfall development in Newport for the remaining Plan period. However, while larger sites come forward less frequently, they too will contribute and cause peaks in the figures when they do. The 95 units windfall allowance proposed is considered to represent a realistic and achievable figure, based primarily on sites of 50 units or less, but acknowledging larger sites will also occur but on a less frequent basis. The approach is not suggesting that sites less than 50 units should only be considered as windfall sites and not allocated in the Plan. Once the Plan is adopted, any new housing sites of 10+ units will be categorised as a windfall site.
- 3.5 On this basis the Council does not consider the allocations of the four new sites to undermine the windfall allowance made in the LDP and is confident that 1,235 windfall units will be achieved over the remaining 13 years of the Plan.

Llanwern former tipping area south of Queensway

- iv) **Does the removal of EM2(ii) as an allocation for employment uses and its exclusion from the identified urban area render the Plan strategy incoherent? Does it make its policies and allocations unrealistic and not based on credible evidence? Does it render the Plan insufficiently flexible to respond to changing circumstances over the plan period?**
- 4.1 Following Session 7 (Employment), the Council removed EM2(ii) as a regeneration allocation for employment uses. The land owner was unable to provide the Council with any firm evidence that suggested that the site could be regenerated within the Plan period. This, coupled with the fact that the LDP contained a surplus of employment land, led the Council to the conclusion that the allocation should be removed from the Plan.
- 4.2 No new evidence has been submitted during the MAC consultation which would offer the Council a reasonable degree of assurance that the site will be redeveloped. As a result, the Council maintains its position that the site should not be allocated.
- 4.3 GVA Grimley (on behalf of Tata Steel UK Ltd) has requested that the site be allocated under Policy EM1 Employment Land. However, the Council believes this would not be appropriate. EM1 is for new employment allocations. It has already been established that much of the former EM2(ii) allocation is already in employment use. As a result, the site would not constitute 'new additional employment land' and would not be an EM1 site.
- 4.4 The Council does not believe that the exclusion of the EM2(ii) as an allocation renders the Plan Strategy incoherent, nor does it make its policies and allocations unrealistic. There is evidence to suggest the remaining employment land allocations within the LDP will be delivered within the Plan period, but not for this site. It would be unrealistic to retain an employment-land allocation when there is no evidence to suggest that it would be developed.
- 4.5 Notwithstanding the above, the Council has considered the matter further in the light of the representations received from GVA Grimley. Considering the amount of employment use currently on the site, it is acknowledged that any future proposals, be they related to the existing employment use or new employment uses, will ultimately fall within countryside and are subjected to more restrictive policy if considered under the LDP as amended with the MAC changes. This could deter future proposals and deter the expansion or retention of these businesses, which is not the intention of the Council.
- 4.6 Arguably, the position taken by the Council following Hearing Session 7 does potentially render the Plan insufficiently flexible to respond to changing circumstance over the Plan period. The realignment of the proposed M4 motorway and junction passing through the site could indeed make the site more attractive for potential redevelopment. Therefore, following further consideration, it is proposed that the site should be reinstated within the urban area, albeit without any designation as employment land.
- 4.7 The reinstatement of the site within the urban boundary would allow the landowners to propose employment based redevelopment projects in accordance with the LDP General Policies. Development proposals promoting alternative uses on this site would be assessed against LDP Policy EM3-Alternative uses of Employment Land.

- 4.8 It is considered that this approach offers flexibility to respond to future events, but stops short of allocating an area where there is little evidence that new additional development will actually occur within the Plan period.
- 4.9 Following the change to the M4 safeguarded corridor, the Council proposes that the urban boundary should follow the northern edge of the safeguarded corridor. Figure 4.1 demonstrates the boundary as per the MAC consultation, Figures 4.2 and 4.3 demonstrate what the Council is now proposing.

Figure 4.1: Urban Boundary (MAC LDP July 2014)

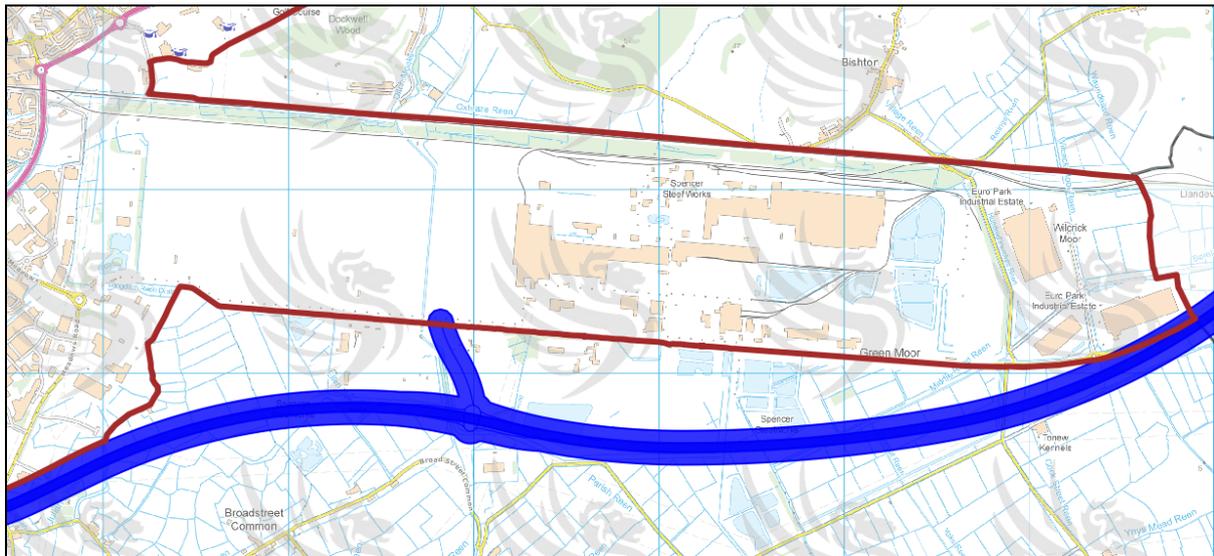


Figure 4.2: Proposed Change to Urban Boundary (following MAC consultation)

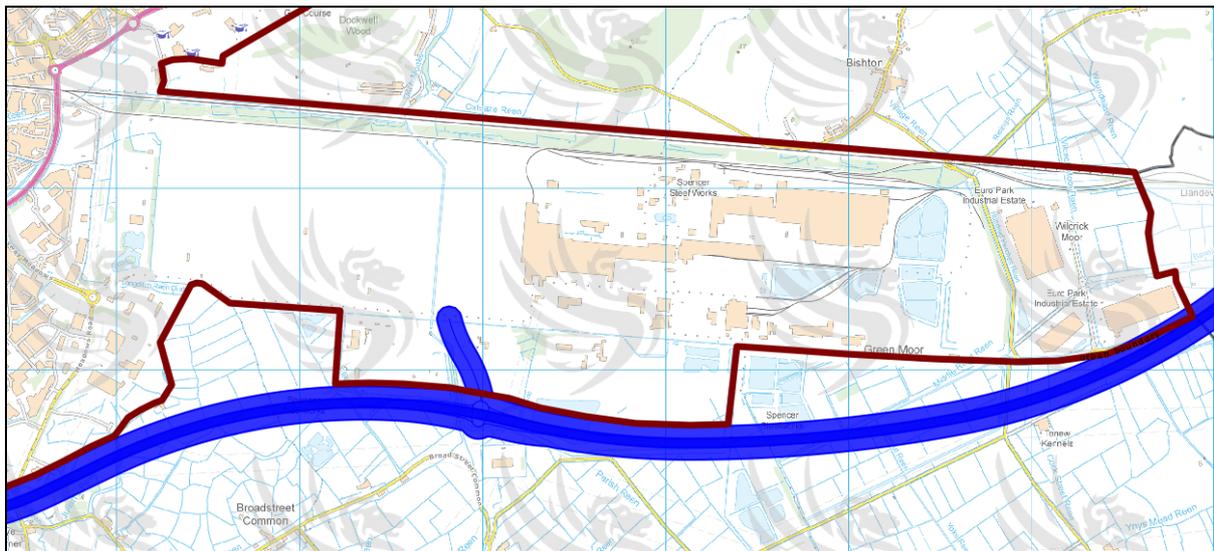
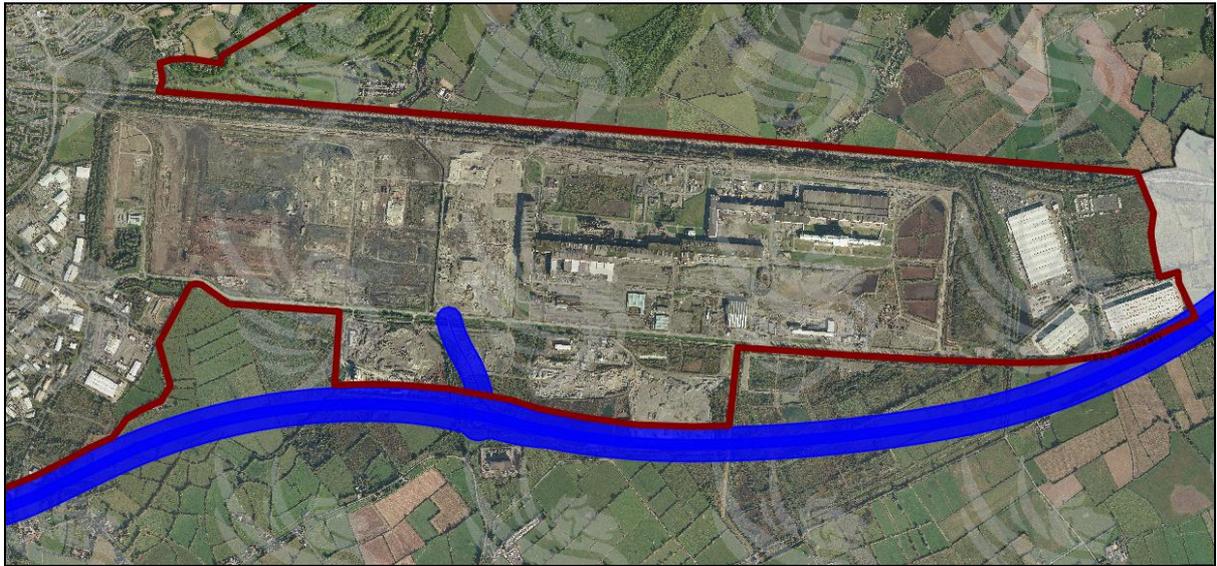


Figure 4.3: Proposed Change to Urban Boundary (Aerial View)



APPENDIX 1

From: Martyn Richards
Sent: 10 July 2014 11:32
To: Emyr Davies
Cc: Steve Bowden; Carl Jones; Steve Davies
Subject: 14/0386 - Queens Hill Education Centre, Queens Hill, Newport, NP20 5XN

Queens Hill Education Centre, Queens Hill, Newport, NP20 5XN

RESIDENTIAL DEVELOPMENT OF UP TO 92 DWELLINGS, FORMATION OF NEW ACCESS, OPEN SPACE, LANDSCAPING, PARKING FOR EXISTING RESIDENTS AND FACILITIES FOR ST MARYS ROMAN CATHOLIC PRIMARY SCHOOL (OUTLINE WITH ACCESS SUBMITTED FOR CONSIDERATION) TOGETHER WITH DEMOLITION OF EXISTING SCHOOL BUILDINGS

With regard to the Transport Statement submitted to support the application for the residential development I note that a subsequent traffic survey was undertaken on June 4th due to the alleged inset day on which the original survey was undertaken. It would appear that the PICADY junction analysis undertaken for the proposed development access has not been updated to include the revised traffic flows, this works must therefore be undertaken to assess the impact of this junction in light of the updated traffic flows.

With regard to the overall impact of the development in terms of traffic generation onto the wider highway network, the Transport Statement confirms that the percentage impact during the peak hours is a maximum of 2.7%, in view of this and taking into account typical daily fluctuations in traffic I am satisfied that the overall traffic generation from the proposed development will have a negligible impact on the highway network.

With regard to the proposed site access, I am happy in principle with the proposed arrangement however, the gradient of the internal access road is currently proposed to be in the region of 1:7, this is unacceptably steep and far short of the desirable gradient of 1:12.5. The 1:7 gradient is considered to be a barrier to pedestrians, particularly those with wheel chairs or pushchairs and with a reduced mobility, additionally steep gradients can give rise to highway safety concerns especially when there is a risk of ice, loss of control and making turning manoeuvres into driveways and parking areas etc. I am aware that following discussions with the Council's Tree Officer some concerns have been raised regarding the proximity of a protected tree to the access road, I have discussed the possibility of relocating the access road further south and have also expressed my concern regarding the gradient of the access road, I understand the developer is currently reviewing the access proposals in light of the concerns raised.

The proposals indicate a new drop off area for St Mary's School, within the site accessible via the proposed new access road. I am aware that previously parents were able to access an informal drop off area via an existing narrow lane close to where the new access is proposed to be constructed, however, it would appear that this facility is no longer available and the gates have been locked to prevent access. Currently therefore, parents must find available on-street parking to drop off and pick up their children, this results in a high level of demand for on-street parking along Queens Hill and Queens Hill Crescent which I am aware is a particular cause of concern and frustration for a number of residents of these streets. The proposed new drop off facility for parents within the development site is designed to help alleviate some of the pressures currently faced, and whilst parents won't be compelled to use this facility it will help to address some of the concerns raised.

The proposed new access road has a width of 7.3m for its initial length, this is wider than that normally provided to serve a small residential development such as this, however, the width of the access road allows for an element of on-street parking provision along this initial length whilst

maintaining sufficient width for two way vehicle flow. It is envisaged that the on-street parking along this length would be subject to an element of parking control either in the form of residents permit parking or limited waiting restrictions, however, this will be subject to future consultation with existing residents once constructed and adopted by the Council.

Additionally, the proposals indicate a length of residents permit parking along Queens Hill, this is not guaranteed and will be subject to future assessment and consultation with residents. Whilst it is noted that the proposed new access will result in the loss of a short length of on-street parking along Queens Hill, additional on-street parking is being created along the proposed new access road to substitute this loss and increase provision.

The drawings must therefore be revised to replace the “residents permit parking” with “parking control, subject to future consultation”

Queens Hill/Pentonville Junction

Some minor improvements to this junction are sought to improve visibility to the right when exiting from Queens Hill, cars and vans are frequently parked within the double yellow lines outside Queens Chambers, it is felt that a kerbed build-out along the length of the double yellow lines will physically prevent parking in this area

And therefore ensure visibility is maximised at all times. It is felt that these works can be accommodated without affecting the free flow of traffic along Pentonville. An indicative design of these improvements should be provided by the applicant and will be subject to detailed design in due course.

Accident Statistics provided by the applicant for the previous three years show a good accident record for this area, there were no reported accidents at the Queens Hill/Pentonville junction or immediately outside the school premises and no accidents during the peak traffic hours. I have also checked accident records for the previous five years which confirms no additional reported personal injury accidents during this time.

The Council is also seeking an obligation on the developer to fund the cost of providing an intermittent 20mph speed limit along Queens Hill adjacent to the school, this is consistent with the Council’s Policy to provide 20mph zones adjacent to schools and a contribution of £20K is sought to provide this. A contribution is also required to upgrade the existing “Zebra” crossing on Queens Hill to a signalised “Pelican” crossing, the value of this contribution will be provided in due course.

On site Layout/Masterplan

The on-site estate roads must be designed to the Council’s approved standards, the masterplan is broadly acceptable however, more information is required regarding the ability of the proposed residential streets to accommodate the movement of refuse vehicles, this includes the proposed roundabout.

The proposed pedestrian links onto St Marks Crescent and Pentonville are welcomed in terms of permeability and promoting accessibility by walking, however, there is the potential for anti-social behaviour associated with these footpath links and careful consideration of the design of these will be required at Reserved Matters stage.

Parking must be provided in accordance with the Newport Parking Standards SPG.

Conditions

Construction Management Plan – Detailing site set up, traffic management plans, contractor parking, wheel wash facilities etc. There should be no deliveries to site between the hours of 0830 and 0930 and 1430 to 1530 to ensure there is no conflict between construction vehicle movements and school drop off and pick up times.

The proposed school drop off area must be available for use prior to the first occupation of any of the new dwellings on site.

The access road serving the residential development and school drop off areas must also be constructed prior to first occupation, this includes footways, pedestrian crossings, street lighting, drainage and carriageway construction to base course level. The final surfacing must be completed prior to occupation of the last house within the development.

Full Engineering drawings for the proposed new highways including layout, widths, gradients, drainage, materials and specifications, cross sections, long sections and details of retaining structures must be submitted and approved prior to commencement of construction.

Sec 106 Obligations

Provision of intermittent 20mph speed limit and associated works.

Upgrade of Zebra Crossing on Queens Hill to signal controlled Pelican/puffin type.

Alignment improvements to junction of Queens Hill and Pentonville junction.

Contribution towards the implementation of parking control schemes on Queens Hill and site access road as deemed appropriate and following relevant consultations.

Regards

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APPENDIX 2

URS

Stage 3 Strategic Flood Consequence Assessment

Additional Housing Allocation
H1(63) – Site Assessment

September 2014

47069846

Prepared for: Newport City
Council

UNITED
KINGDOM &
IRELAND



| Rev | Date | Details | Prepared by | Checked by | Approved by |
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1. INTRODUCTION

- 1.1.1 URS Infrastructure & Environment UK Limited (URS) completed the Newport City Council (NCC) Stage 3 Strategic Flood Consequence Assessment (SFCA) in March 2013 for eight sites identified for inclusion within the Deposit Local Development Plan (LDP). This provided a detailed analysis of flooding mechanisms and consequences for a set of agreed scenarios using the Newport Tidal Model (provided by Natural Resources Wales (NRW)¹).
- 1.1.2 In January 2014, the Welsh Government issued a letter to Chief Planning Officers regarding planning policy on flood risk and insurance industry changes² and a summary of what Technical Advice Note (TAN) 15 requires for highly vulnerable development (houses) to be considered acceptable. NCC identified seven additional sites that have extant planning permission for housing. These additional sites were assessed within the NCC Stage 3 SFCA Additional Site Assessment completed in March 2014.
- 1.1.3 In August 2014, NCC identified four new housing allocations to meet the LDP housing shortfall. One housing allocation (H1(63)) is located in an area of flood risk and therefore NCC has commissioned URS to undertake a Stage 3 SFCA for this additional housing allocation. The same approach has been adopted as within the Stage 3 SFCA undertaken in March 2014. A summary table is provided in Section 5 to aid NCC in application of the Justification Test.

¹ Formerly Environment Agency Wales

² See: <http://wales.gov.uk/topics/planning/policy/dear-cpo-letters/flood-risk-and-insurance-changes/?lang=en>

2. OVERVIEW

2.1 Additional Housing Allocations

2.1.1 The Inspector concluded that the LDP currently falls short of its housing target by 274 units. NCC proposes to meet this shortfall by allocating four new housing sites to the LDP:

- Postal Exchange H1(61);
- Queens Hill School H1(62);
- Telford Depot H1 (63);
- Uskside Paint Mills H1 (64).

2.1.2 Three of the additional housing allocation sites are not located within an area of flood risk, however the Environment Agency Flood Map for Planning (from Rivers and the Sea) indicates that site H1(63) is located within Flood Zone 3, when ignoring the presence of existing flood defences. The Flood Map also indicates that the site benefits from flood defences during a present day tidal flood event with a 0.5% (1 in 200) chance of happening each year.

2.1.3 A location map showing the additional housing allocation site H1(63) with the extent of Flood Zone 2 and 3 is provided in Appendix A.

2.2 Hydraulic Modelling Data

2.2.1 NRW provided hydraulic modelling data relevant to the area of interest within the NCC administrative area for the Stage 3 SFCA. URS undertook a review³ of the Newport Tidal Model v3.1 (Newport Strategic Flood Risk Mapping Update) in 2012 to identify its suitability and limitations for application within the previous Stage 3 SFCAs and inform the methodology.

2.2.2 NRW was consulted regarding updates to the Newport Tidal Model since the Stage 3 SFCA in 2013. Whilst minor amendments have been made (v3.2), results from the v3.1 model used in 2013 have not been updated (only confidence intervals results). To ensure consistency with the previous Stage 3 SFCAs, results for the v3.1 model have been used within the assessment of additional sites (i.e. additional site assessments undertaken in March and September 2014).

2.2.3 The model extent represents a significant portion of the NCC administrative area including Newport City Centre. A fluvial upstream boundary and a tidal downstream boundary have been applied for the River Usk to represent flows within the model. The model has been simulated for a total time of 50 hours; incorporating 4 tidal peaks (see Figure 2.1).

The reference of 'time' within the flood event scenario summary table provided in Section 4 of this report refers to time from start of model simulation.

2.2.4 The River Usk is represented by a one-dimensional model (ESTRY) which is truncated and hydraulically linked to the land domain using a two-dimensional model (TUFLOW). The model format is considered suitable for the purpose of defining areas of flood inundation within the model extents. A breakdown of the key information following the model review is provided in Table 2.1.

³ Stage 3 Strategic Flood Consequence Assessment, Data Review and Proposed Stage 3 Methodology, December 2012, prepared by URS for Newport City Council

Table 2.1: Newport Tidal Model Key Information

| Model Name | Review Comments |
|----------------------------|---|
| Newport Tidal Model | 1 Appropriate hydraulic representation of the Tidal River Usk only. The flood risk is considered to be predominantly from tidal sources, therefore considered suitable for the Stage 3 SFCA. Model results provided for 1 in 200 year (including climate change scenarios for 100 year lifetime), 1 in 1000 year (including climate change scenarios for 100 year lifetime), 1 in 200 year present day for 5 separate breach locations. However, breach scenarios for climate change were not included therefore required running. |
| | 2 No fluvial hydrology of the River Usk has been undertaken apart from inflows represented by the 1 in 2 year (Qmed) return period. The flood risk is considered to be predominantly from tidal sources, therefore representation of the fluvial flows by the 1 in 2 year combined with a range of tidal return periods is considered appropriate. |
| | 3 No channel cross section representation of the Ebbw River within the model is included. The Ebbw River is represented using LiDAR only with no upstream hydrology. This model cannot presently be used for the representation of the Ebbw River. However, this does not affect the extant planning permission identified for the additional site assessments required for the Stage 3 SFCA. |
| | 4 TUFLOW 2D aspect of the model is multi domain where all areas, except for the Crindau region on the right bank of the River Usk (5m), has been modelled at a 10m grid resolution. This is considered appropriate at the strategic level. |
| | 5 No evidence of model sensitivity has been provided. However, because this has been used by NRW to update Flood Zone designations it is assumed that appropriate sensitivity analysis has been undertaken. |

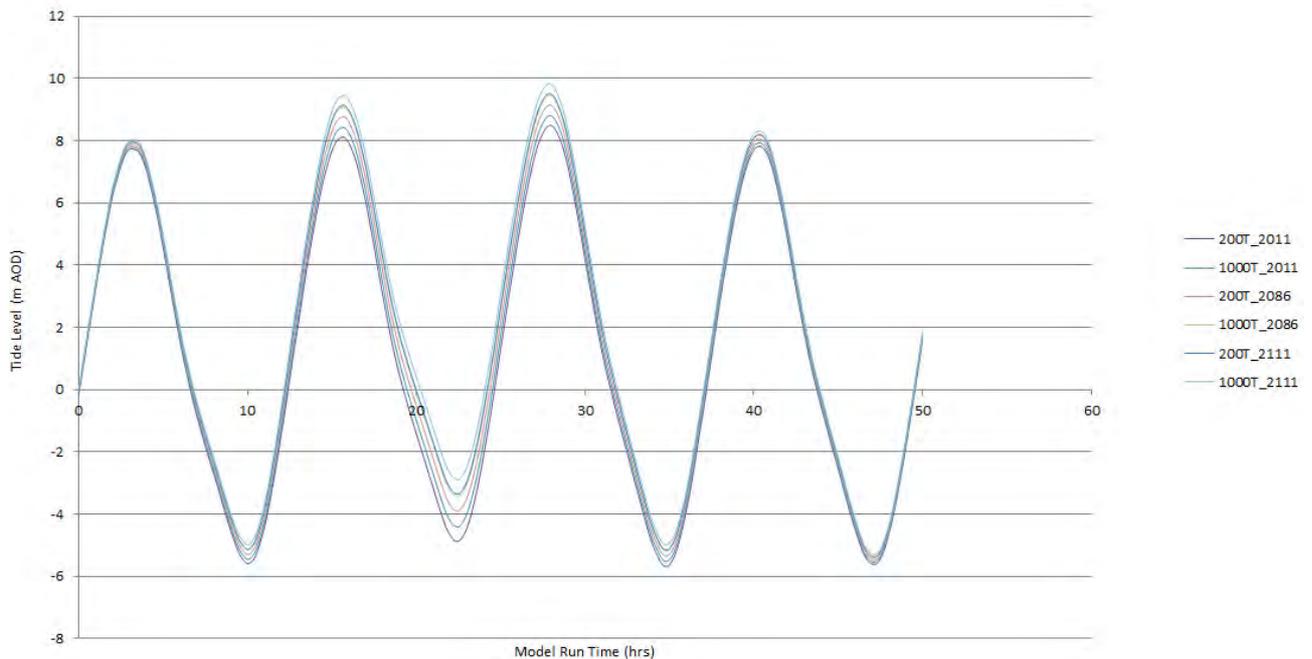


Figure 2.1: Tidal Curve – Newport Model Downstream Boundary

3. SITE ASSESSMENT METHODOLOGY

3.1 Overview

3.1.1 This section provides the methodology for undertaking the additional housing allocation H1(63) site assessment and is consistent with the work undertaken for the previous Stage 3 SFCA undertaken in March 2014. The Newport Tidal Model will be utilised to inform the flood consequences at an appropriate spatial scale for the additional site. This approach allows efficient use of best available existing data whilst providing sufficient information to NCC to inform decisions in the allocation of future development sites.

3.1.2 The adopted approach is based on the review of the Newport Tidal Model undertaken for the previous Stage 3 SFCAs and assumes that the dominant risk to sites is from tidal flood sources. The methodology was previously agreed with NCC and NRW for the previous Stage 3 SFCAs.

3.2 TAN15 Requirements

3.2.1 Appendix 1 of TAN15 provides guidance on how the potential consequences of flooding should be considered including technical requirements. Additional guidance regarding development lifetime issued in January 2014 by the Welsh Government has also been accounted for within this assessment. It is noted that there is no specific guidance for SFCAs, however, the following information is provided based on TAN15 and the available data from the Newport Tidal Model:

- Mechanism of flooding (overtopping or breach of existing defences);
- Source of flooding (tidally dominated system);
- Depth of flooding (including time to maximum depth);
- Time of inundation (including time to first and maximum inundation);
- Assessment of flood hazard (combination of depth and velocity);
- Commentary on escape / evacuation routes.

3.2.2 These allow NCC to make an informed decision with regard to Part iv of the Justification Test (see Section 6, TAN15). Part i to Part iii of the Justification Test should be part of NCCs decision process but they are not included within the Stage 3 SFCA.

3.3 Methodology

3.3.1 The following methodology has been adopted to meet the requirements of TAN15 utilising the existing information from the Newport Tidal Model:

- 1) Depth and hazard mapping centred on the additional housing allocation site H1(63) for scenarios provided in Table 3.1 were produced (Appendix B);
- 2) The maximum depth and hazard mapping for the scenarios were used to investigate the flood consequences at the additional housing allocation site H1(63). For the purpose of assessing the additional housing allocation, Scenarios 1, 3, 4, 6, 7 and 9 have been used within this report to account for a 100 year development lifetime for housing;

The flood hazard classification was generated using modelling outputs in line with the Defra R&D Technical Report FD2320/TR2 (Flood Risk Assessment Guidance for New Development) and accompanying supplementary guidance issued in May 2008 by the

Environment Agency and HR Wallingford. The flood hazard is expressed as a combination of flood depth and velocity and is divided into low, moderate, significant or extreme hazard. The maximum flood hazard for a given location can be experienced at any stage of a flood.

Where overtopping or a breach occurs, high velocities are likely to be experienced and the highest hazard is likely to be experienced at the time of peak velocity. Further from an overtopping or defence breach location, the level of hazard will depend on local factors affecting both the depth and velocity of floodwaters during a flood event. Peak depth and velocities occur predominantly during the peak tidal cycle that is the largest of the four which have been simulated by the hydraulic model (Figure 2.1).

Table 3.1: Scenarios assessed for Stage 3 Assessment

| Scenario ¹ | Breach ² | Overtopping | Tidal Return Period | Allowance for Climate Change |
|-----------------------|---------------------|-------------|---------------------|------------------------------|
| 1 | No | Yes | 200 year | - |
| 2 | No | Yes | 200 year | 2086 |
| 3 | No | Yes | 200 year | 2111 |
| 4 | No | Yes | 1000 year | - |
| 5 | No | Yes | 1000 year | 2086 |
| 6 | No | Yes | 1000 year | 2111 |
| 7 | Yes | Yes | 200 year | - |
| 8 | Yes | Yes | 200 year | 2086 |
| 9 | Yes | Yes | 200 year | 2111 |

¹Scenarios that have been struck through have not been assessed for this additional site; however scenario numbering has been kept consistent with the previous Stage 3 SFCAs to ease cross referencing between reports.

²Breach Location 3 has been used for the additional housing allocation site H1(63).

The review of the Newport Tidal Model identified five breach locations that were modelled. Based on the location of the additional housing allocation site H1(63) an assessment of the effects of breaching of flood defences has been undertaken at Breach Location 3. The location of this breach is provided within the site assessment section (see Section 4).

- 3) A general summary of the modelling results has been undertaken and provides:
 - Flood propagation and depth of overtopping for present day and climate change scenarios;
 - Flood propagation and depth of breach (and overtopping) results for present day and climate change scenarios;
 - Flood hazard.
- 4) For a representative selected point within the site, a summary table has been provided for each scenario that provides the maximum depth, time of maximum depth, maximum hazard and time of first inundation.
- 5) An assessment of the potential escape / evacuation route has been undertaken with reference to the 1 in 200 year event including climate change. This includes an assessment of the time of first overtopping, time of first inundation at the site and the

potential escape / evacuation route available. This has also been assessed alongside the availability of the Flood Warnings Direct service.

- 6) Following the above assessments, other considerations have been provided with regard to potential mitigation requirements and suitability for passing the Justification Test to aid NCC in their decision making process.

3.3.2 A summary of the above is provided in Section 5 of this document.

3.4 Assumptions and Limitations

3.4.1 The following assumptions and limitations have been made based on the review of the model, budgetary and time constraints for NCC and the strategic nature of the study:

- The Newport Tidal Model has been reviewed by NRW and was used to undertake Strategic Flood Risk Mapping, it is understood appropriate sensitivity tests have been undertaken with regard to model confidence intervals;
- The dominant flood risk to the additional site identified is tidal. Fluvial flood risk is not to be considered as significant as the consequences of tidal flooding. With the exception of the boundary conditions (1 in 2 year fluvial inflow), no fluvial events are considered;
- The methodology is appropriate for the strategic nature of the study and the recent change in policy with regard to development lifetime for housing;
- Assessment of the structural adequacy of existing flood defences and the cost of future maintenance are not considered as part of this assessment;
- With the exception of Scenarios 8 and 9 in Table 3.1, no additional hydraulic model runs have been undertaken. In addition, it is not considered pragmatic to undertake breach scenarios for the 1 in 1000 year event and therefore these have not been included.

4. RESULTS

4.1 Overview

4.1.1 The results of the Newport Tidal Model (Scenarios 1, 3, 4, 6, 7 and 9) have been used to determine the potential consequences of flooding at additional housing allocation site H1(63).

4.1.2 To assess residual risk posed to each site due to defence failure, breach analysis results from the Newport Tidal Model have been used. Breach location 3 has been selected for each site based on the previous Stage 3 SFCA work.

4.1.3 A description of the flood event scenario results is provided, including guidance on safe escape and evacuation, flood hazard and suitability for development in terms of TAN15. Other site specific considerations are also provided for the additional housing allocation site.

4.2 Site Description

4.2.1 Additional housing allocation H1(63) is located on the left bank of the River Usk, approximately 500 m inland from the George Street Bridge. The site, which is bordered by Telford Street to the south and Soho Street to the north, is currently used as office space and a depot for vehicle storage. A summary of the tidal flood risk is provided in Table 4.1.

4.2.2 Figure 4.1 provides an overview of the site location. The maximum flood depth and hazard maps for all modelled scenarios considered at the site are provided in Appendix B.

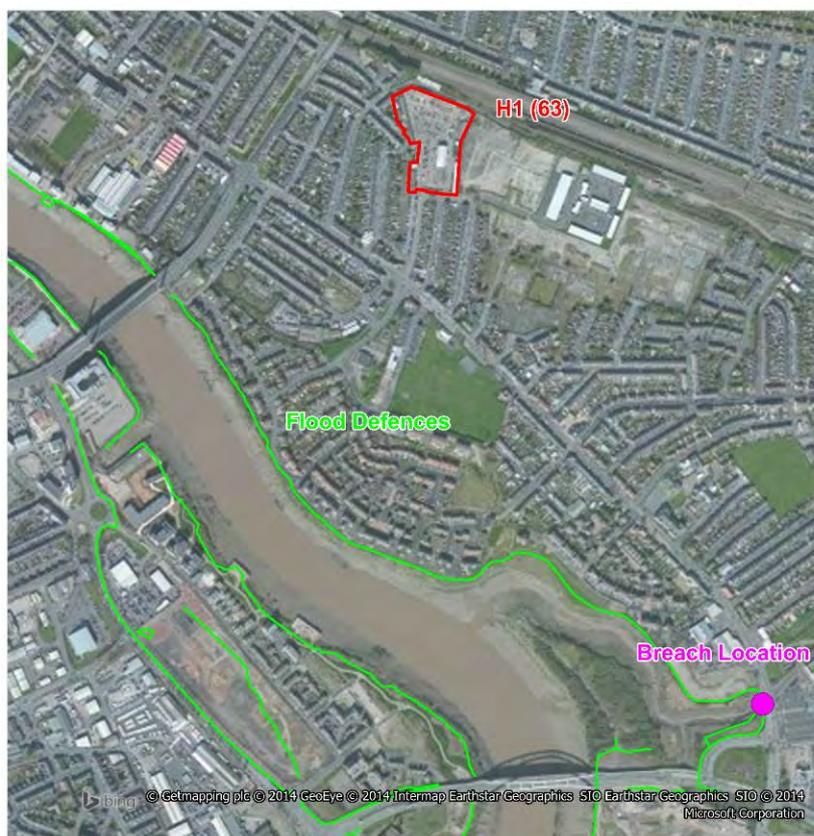


Figure 4.1 – H1(63) – SFCA Site Location (bing © Getmapping plc © 2014 GeoEye © 2014 Intermap Earthstar Geographics SIO Earthstar Geographics SIO © 2014 Microsoft Corporation)

4.2.3 The predominant flood source within this area is tidal flooding from the River Usk. The NFCDD dataset indicates that no known formal defences are present on the left bank of the River Usk in the vicinity of the George Street Bridge.

4.2.4 However, the Environment Agency Flood Map for Planning (River and Sea) indicates that additional housing allocation H1(63) is located within an area benefiting from defence, suggesting that existing non-formal flood defences present within this area offer protection to this additional housing allocation site.

Table 4.1: Additional Housing Allocation H1(63) – Flood Event Scenario Summary

| Scenario | Maximum Depth (m) | Time of Maximum Depth (hr) | Maximum Hazard | Time of first Overtopping (hr) | Time of first Inundation (hr) |
|----------|-------------------|----------------------------|----------------|--------------------------------|-------------------------------|
| 1 | - | - | - | - | - |
| 3 | 0.85 | 30.5 | Significant | 15.5 | 28.5 |
| 4 | - | - | - | - | - |
| 6 | 2.15 | 29 | Extreme | 15 | 16.5 |
| 7 | - | - | - | - | - |
| 9 | 1.15 | 29.5 | Significant | 3 | 18 |

4.3 Present Day (2011)

4.3.1 **200 year Tidal (Scenario 1)** – No flooding is observed at the site during this event. No overtopping of the River Usk is experienced in the vicinity of the site.

4.3.2 **1000 year Tidal (Scenario 4)** – No flooding is observed at the site during this event. No overtopping of the River Usk is experienced in the vicinity of the site.

4.3.3 **200 year Tidal: Breach (Scenario 7)** – No flooding is observed at the site during this event. No overtopping of the River Usk is experienced in the vicinity of the site.

4.4 Climate Change (2111)

- 4.4.1 Accounting for climate change up to 2111, the extent and depth of flooding at the site is significantly increased. The entire site is inundated with flood waters during the 200 year tidal (including breach) and 1000 year tidal flood events.
- 4.4.2 **200 year Tidal (Scenario 3)** – First inundation and the maximum depth of flooding (0.85 m) is experienced during the third tidal cycle. However, the time of first overtopping for this climate change event is during the second tidal cycle (15.5 hours).
- 4.4.3 **1000 year Tidal (Scenario 6)** – First overtopping and first inundation occurs during the second tidal cycle; however the maximum depth of flooding (2.15 m) is not experienced until the third tidal cycle.
- 4.4.4 **200 year Tidal: Breach (Scenario 9)** – Flood water flows through the breach during the first tidal cycle; however time of first inundation does not occur until the second tidal cycle with maximum depth of flooding (1.15 m) experienced during the third tidal cycle.

4.5 Flood Hazard

- 4.5.1 Flood hazard maps for the scenarios shown in Table 4.1 are provided in Appendix B and illustrate the low, moderate, significant or extreme hazard based on model outputs.
- 4.5.2 No flooding is experienced at the site during the present day scenarios, including the 200 year tidal (Scenario 1), 1000 year tidal (Scenario 4) and the 200 year tidal breach (Scenario 7). Therefore the site is considered safe in terms of tidal flood risk under present day conditions.
- During the 200 year tidal (Scenario 4) and 200 year tidal breach (Scenario 9) climate change scenarios the maximum and predominant flood hazard is significant (i.e. danger for most people). During the 1000 year tidal (Scenario 6) the maximum flood hazard is extreme (i.e. danger for all).

4.6 Escape / Evacuation

- 4.6.1 To ensure escape / evacuation routes from the site are considered over the development lifetime the 200 year tidal (2111) (Scenario 3) flood event has been selected.
- 4.6.2 The suggested escape / evacuation route from the site to the limit of the floodplain is west along Phillip Street, north along Wharf Road (B4237) under the railway bridge and then north along Victoria Avenue (Figure 4.2).
- 4.6.3 The maximum flood depth and hazard mapping for Scenario 3 provided in Appendix B, indicates that the distance of this suggested route to the limit of the floodplain is approximately 450m, with a maximum hazard of significant (i.e. danger for most people).
- 4.6.4 In the unlikely event that no prior flood warning is given, the model results indicate that from the time of first overtopping (15.5 hours), to the time at which the escape / evacuation route is first inundated with floodwaters (28.5 hours), a 13 hour period is available for site evacuation via the escape / evacuation route identified.
- 4.6.5 Figure 4.2 (i) shows the extent of flooding when overtopping first occurs (15.5 hours) whilst Figure 4.2 (ii) indicates the flood extent and associated flood depths after 28.5 hours.

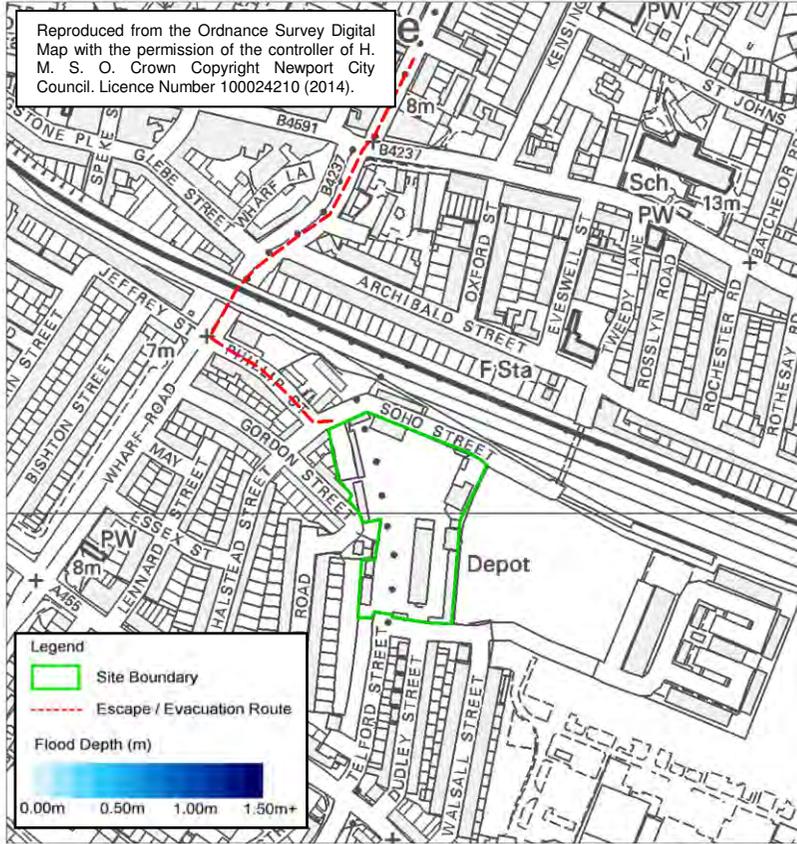


Figure 4.2 (i) – Escape / Evacuation Route – H1 (63)

- 200 year Tide Return Period (2111)
- Time of First Overtopping of Region
- 15.5 Hours

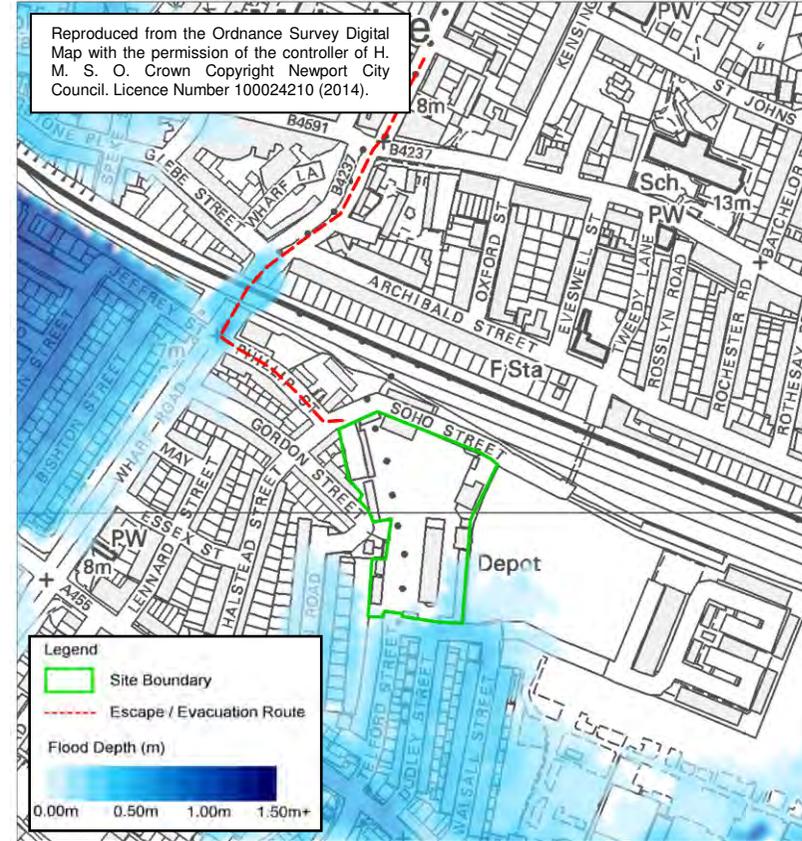


Figure 4.2 (ii) – Escape / Evacuation Route – H1 (63)

- 200 year Tide Return Period (2111)
- Time when Escape / Evacuation Route becomes inaccessible
- 28.5 Hours

4.7 TAN15 Justification of Development

- 4.7.1 TAN15 Appendix 1 provides indicative guidance on the return period threshold, below which, flooding for different types of development should not be allowed. As site H1(63) is a housing allocation in accordance with TAN15 the 200 year tidal (2111) event has been selected as the return period threshold to assess the sites suitability for development.
- 4.7.2 For return periods beyond this threshold, TAN15 also provides indicative guidance on what is considered tolerable limits for different types of development including maximum depth and maximum speed of inundation.
- 4.7.3 TAN15 Appendix 1 indicates that the maximum flood depth considered tolerable beyond the return period threshold within a residential development is 0.6 m. Figure 4.3 indicates areas across the site with flood depths less than 0.6 m (shaded green), between 0.6 m and 1.0 m (shaded blue) and greater than 1.0 m (shaded purple) during the 200 year tidal (2111) event.

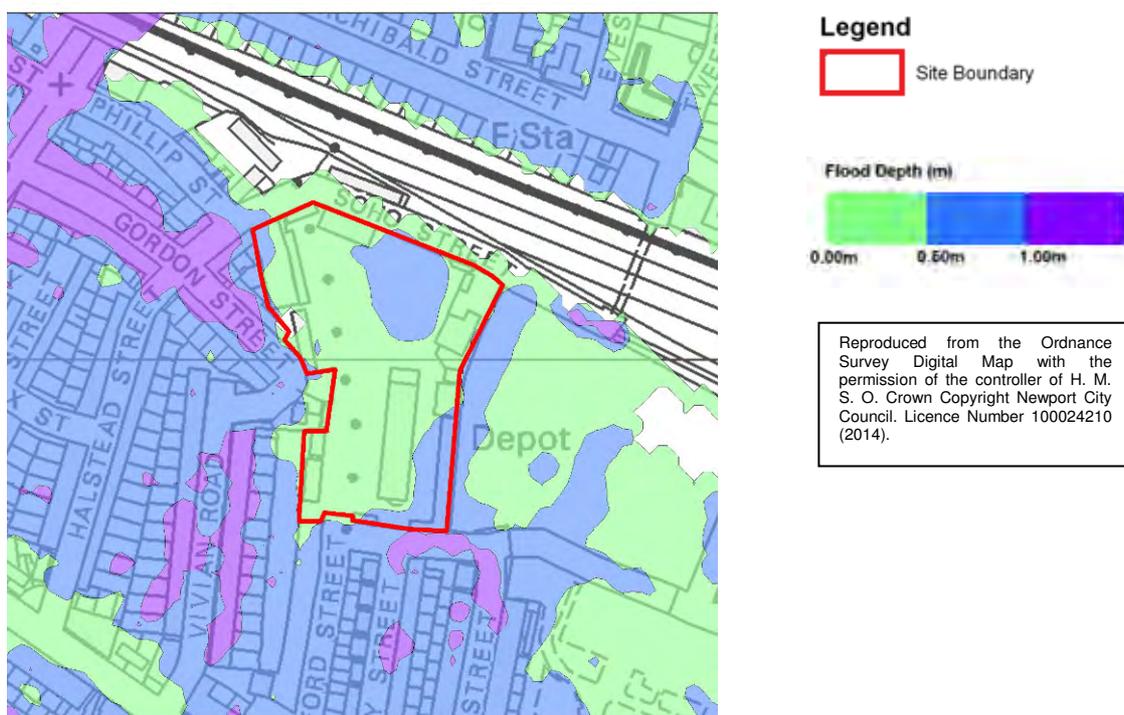


Figure 4.3: Scenario 3: 200 year Tide (2111) - Flood Depth Bands

- 4.7.4 Figure 4.3 indicates that climate change poses constraints to the additional housing allocation site H1(63). Mitigation measures would be required to justify development in line with Part iv of the Justification Test in TAN15.
- 4.7.5 Mitigation measures may include a combination of raising flood defences, raising ground levels and ensuring minimum finished flood levels are set sufficiently above the 200 year tidal (2011) flood level to ensure flood depths are within tolerable limits in line with the acceptability criteria within TAN15 Appendix 1. However, the viability of delivering such measures is not tested within this SFCA.
- 4.7.6 TAN15 Appendix 1 also indicates the maximum speed of inundation of flood risk considered tolerable for residential development (4 hours). As discussed above, during the 200 year tidal

(2111) event the maximum speed of inundation at the site is 13 hours and therefore considered to be inside the tolerable limits set out within TAN15 Appendix 1.

4.7.7 Furthermore, the Flood Warnings Direct service covers this area, which should provide adequate time to evacuate the site or to retreat to a safe position (i.e. within the site boundary).

4.8 Other Considerations

4.8.1 If this site is considered by NCC to pass the other elements of the Justification Test and becomes adopted within the LDP, a site specific Flood Consequence Assessment (FCA) will be required to support the planning application. Consultation with the NRW and other relevant stakeholders will be required to ensure the layout and design of the site is safe for the lifetime of the development. In addition, the following considerations should also be made:

- Raising of ground levels and setting of minimum finished floor level at this site would be required to ensure that the maximum flood depth threshold is not exceeded, in line with TAN15 Appendix 1. Floodplain compensation is unlikely to be required at this location due to the predominant flood source being tidal;
- Surface water management measures should include SuDS (refer to Stage 2 SFCA for general details) and consideration of potential tide locking of outfalls to the River Usk should be taken into account;
- A site evacuation plan and escape plan would be required to ensure the safety of occupiers and users.

4.9 Conclusions

4.9.1 The following conclusions for additional housing allocation H1(63) have been made:

- Under present day conditions the site remains dry during the 200 year tidal event (including breach scenarios) and 1000 year tidal event.
- The site is constrained under climate change conditions. The entire site would be inundated with flood water during both the 200 year tidal (2111) (including breach scenario) and 1000 year tidal (2111) events.
- During climate change events the flood hazard at the site during the 200 year tidal (2111) event is significant, increasing to extreme during the 1000 year tidal (2111) event.
- Due to the site being set back (500 m inland) from the River Usk Estuary, the time between first overtopping and first inundation is approximately 13 hours (during 200 year tidal 2111 event). Therefore, the maximum speed of inundation at the site considered to be inside the tolerable limits set out within TAN15 Appendix 1.
- Where land is allocated for development a site specific FCA will be required, building on the information in this report. This should incorporate additional information on mitigation of residual risk and emergency planning procedures to ensure escape / evacuation is achievable for the lifetime of the development.

5. SUMMARY

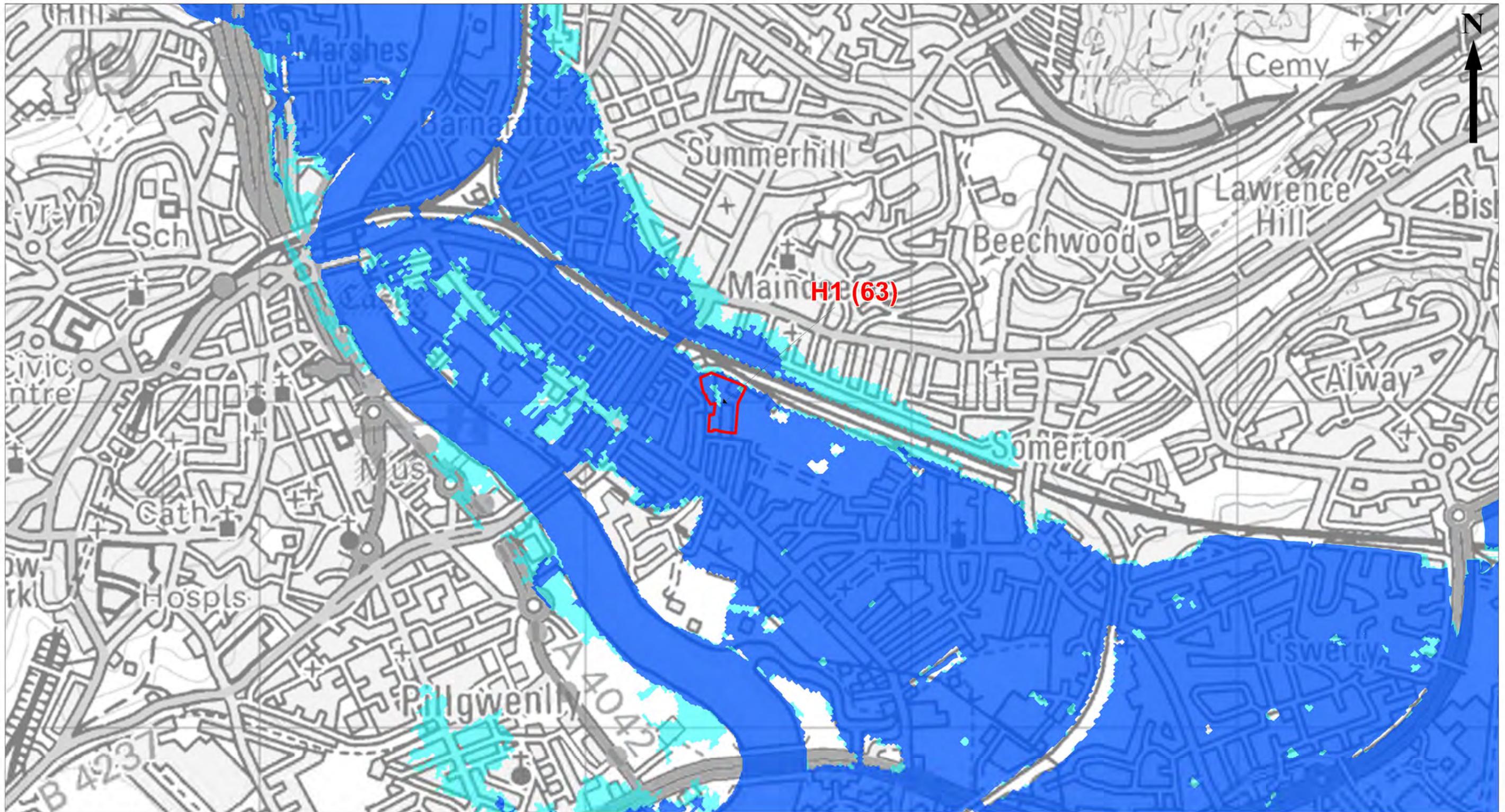
- 5.1.1 The flood depth and hazard mapping (see Appendix B) and analysis of results (see Section 4) are summarised in Table 5.1.
- 5.1.2 The TAN15 acceptability criteria for residential development are based on flood conditions during the 200 year tidal event. To ensure the TAN15 acceptability criteria is considered over the development lifetime, Table 5.1 focuses on flood conditions during the future 200 year tidal (2111) (Scenario 3).
- 5.1.3 In addition to the existing (2011) and future (2111) maximum flood hazard at each site, Table 5.1 indicates whether flood conditions are within maximum depth and time to inundation 'tolerable limits' as identified within TAN15 Appendix 1.
- 5.1.4 Where the maximum flood depth onsite is noted to exceed TAN15 'tolerable limits', a simple indication of the level of mitigation required (i.e. raising of ground levels) before the site is developable has been provided. The level of mitigation is classified as 'low' where the maximum flood depth is less than 0.6 m, 'moderate', where the maximum flood depth is greater than 0.6 m, and 'significant', where the maximum flood depth is greater than 1.0 m.
- 5.1.5 Information regarding time to inundation is important where considering whether sufficient time is available for safe escape / evacuation from the development site prior to the onset of floodwaters. Time of inundation is based on model results from the time of first overtopping to the time at which the escape / evacuation route is first inundated with floodwaters.
- 5.1.6 Where the time to inundation of escape / evacuation routes is noted to exceed TAN15 'tolerable limits' (i.e. less than 4 hours), this has been noted in Table 5.1.

Table 5.1: Additional Housing Allocation H1(63) Summary Table

| Additional Site Assessed | Existing Max Hazard (Scenario 1 - 200yr Tidal 2011) | Future Max Hazard (Scenario 3 - 200yr Tidal 2111) | TAN15 Acceptability Criteria (Future Max Depth) (Scenario 3 - 200yr Tidal 2111) | TAN15 Acceptability Criteria (Future Escape / Evacuation – Time of Inundation) (Scenario 3 - 200yr Tidal 2111) |
|--------------------------|---|---|---|--|
| H1(63) | - | Significant | Moderate Mitigation Required (>0.6 m) | Within Tolerable Limits (< 4 hrs) |

APPENDIX A

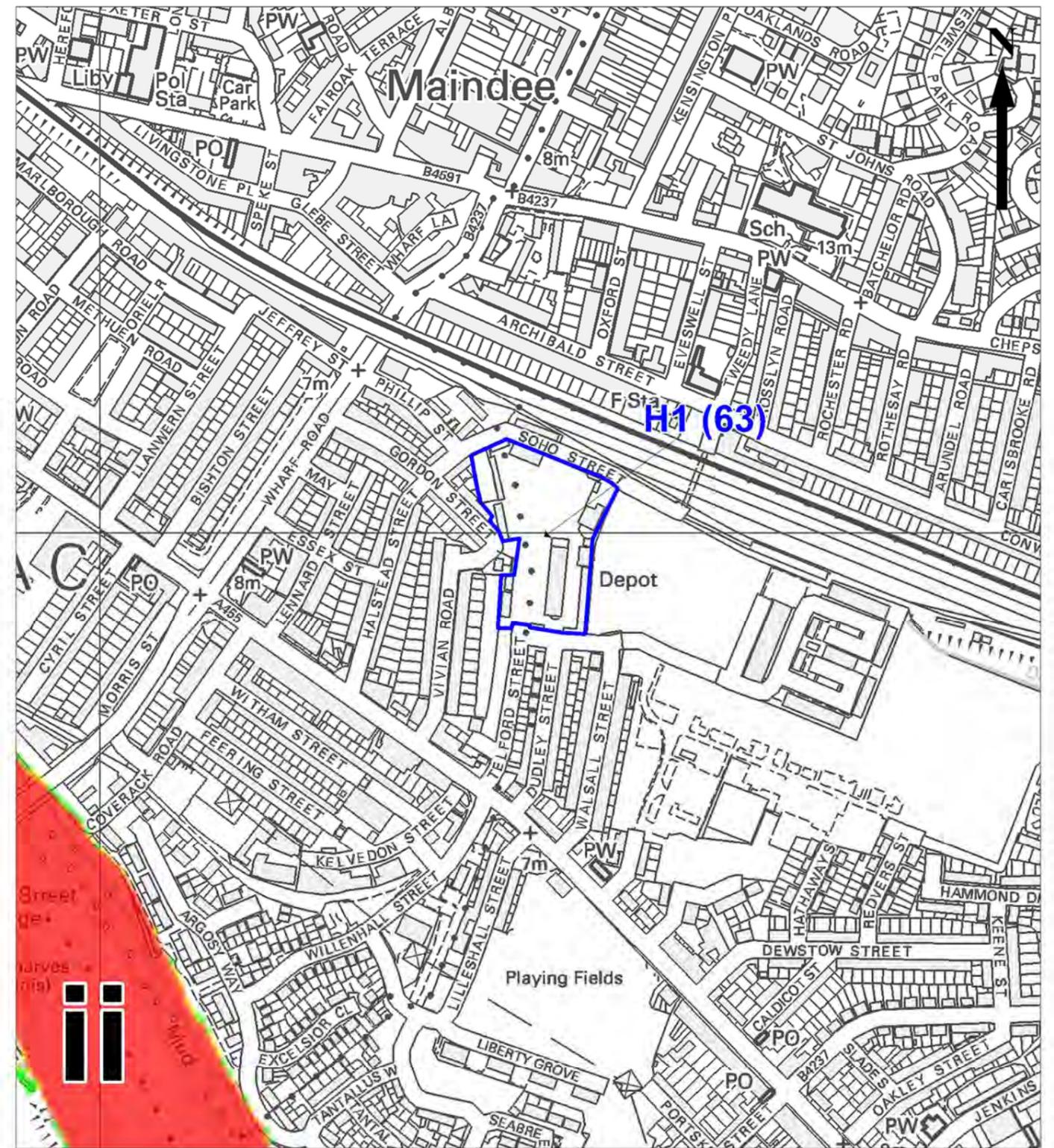
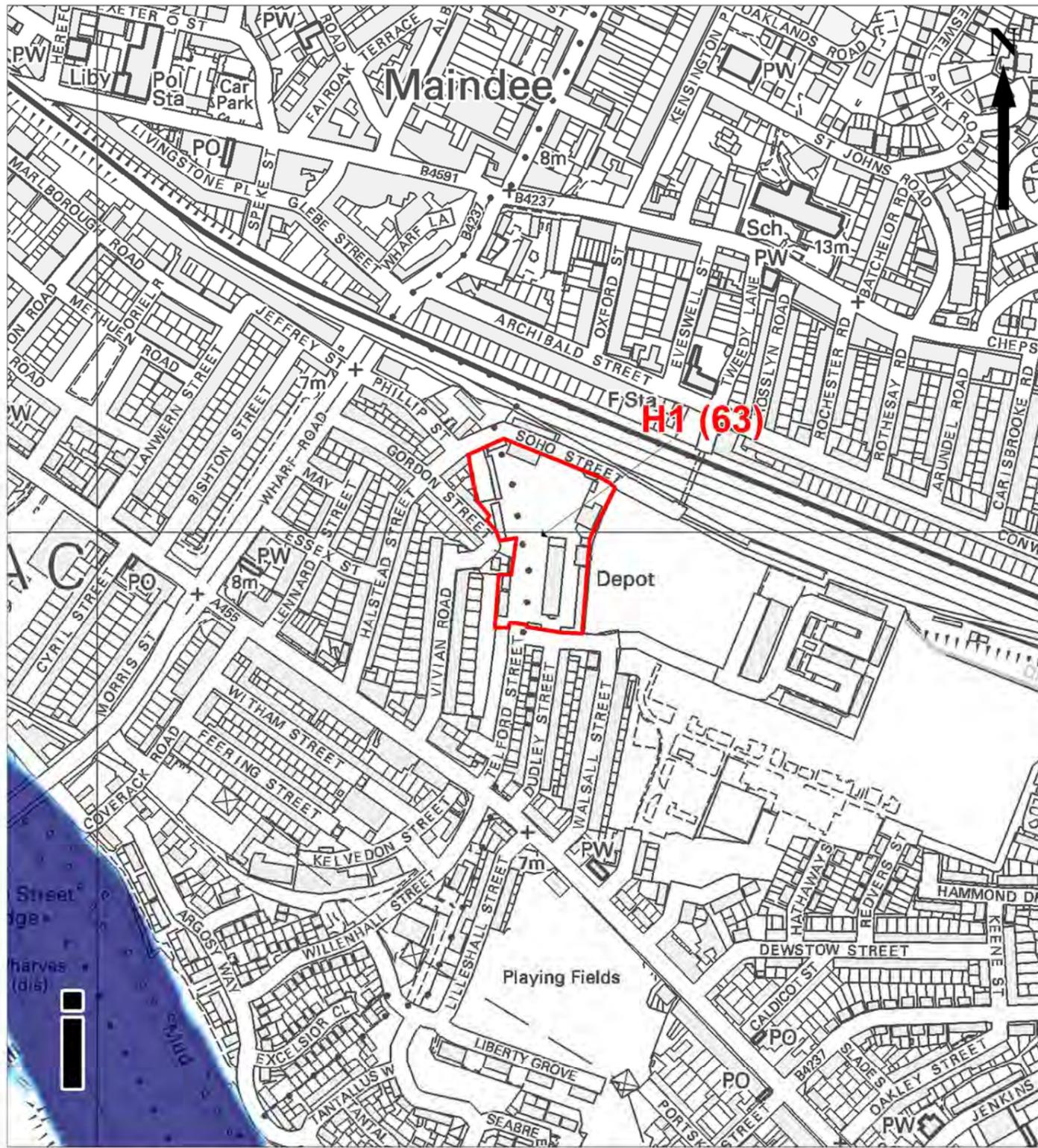
LOCATION MAP



| | | | | |
|--|---|--|----------------------------|----------------------------------|
| <p>Legend</p> <p> Additional Housing Allocation H1 (63)</p> | <p>Client: Newport City Council</p> | <p>Project: Stage 3 Strategic Flood Consequence Assessment</p> | | |
| <p>EA Flood Zones</p> <p> Flood Zone 3</p> <p> Flood Zone 2</p> | <p><small>Reproduced from the Ordnance Survey Digital Map with the permission of the controller of H. M. S. O. Crown Copyright Newport City Council. Licence Number 100024210 (2014)</small></p> <p><small>All data used is based on information provided by Newport City Council and the Environment Agency.</small></p> <p><small>This drawing may only be used at a strategic level and only for the purpose intended.</small></p> | <p>URS</p> <p><small>URS Infrastructure and Environment Ltd The Crescent Centre Temple Back Bristol BS1 6EZ www.ursglobal.com</small></p> | | |
| <p>Scale at A3: 1: 11,500</p> | <p>Date: Sept 2014</p> | <p>Drawn by: RM</p> | <p>Approved By: MC</p> | <p>Figure A-1: Site Overview</p> |

APPENDIX B

DEPTH & HAZARD MAPPING



| | | | |
|---------------------------------------|---------------------------------------|-----------------------------|-------------|
| Depth Legend | | Hazard Legend | |
| Additional Housing Allocation H1 (63) | Additional Housing Allocation H1 (63) | Low | Significant |
| Maximum Flood Depth (m) | | Maximum Flood Hazard | |
| | | Moderate | Extreme |

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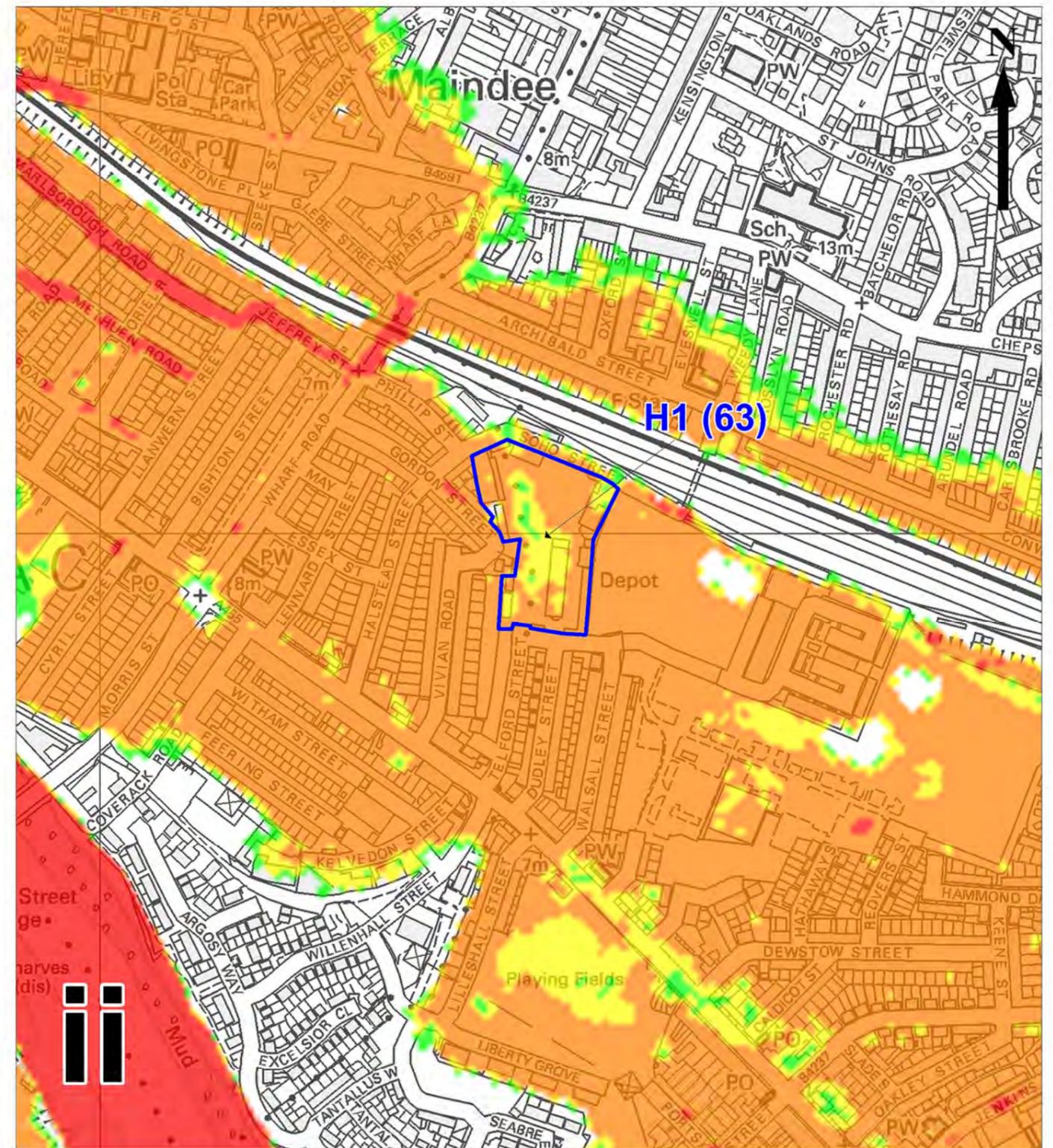
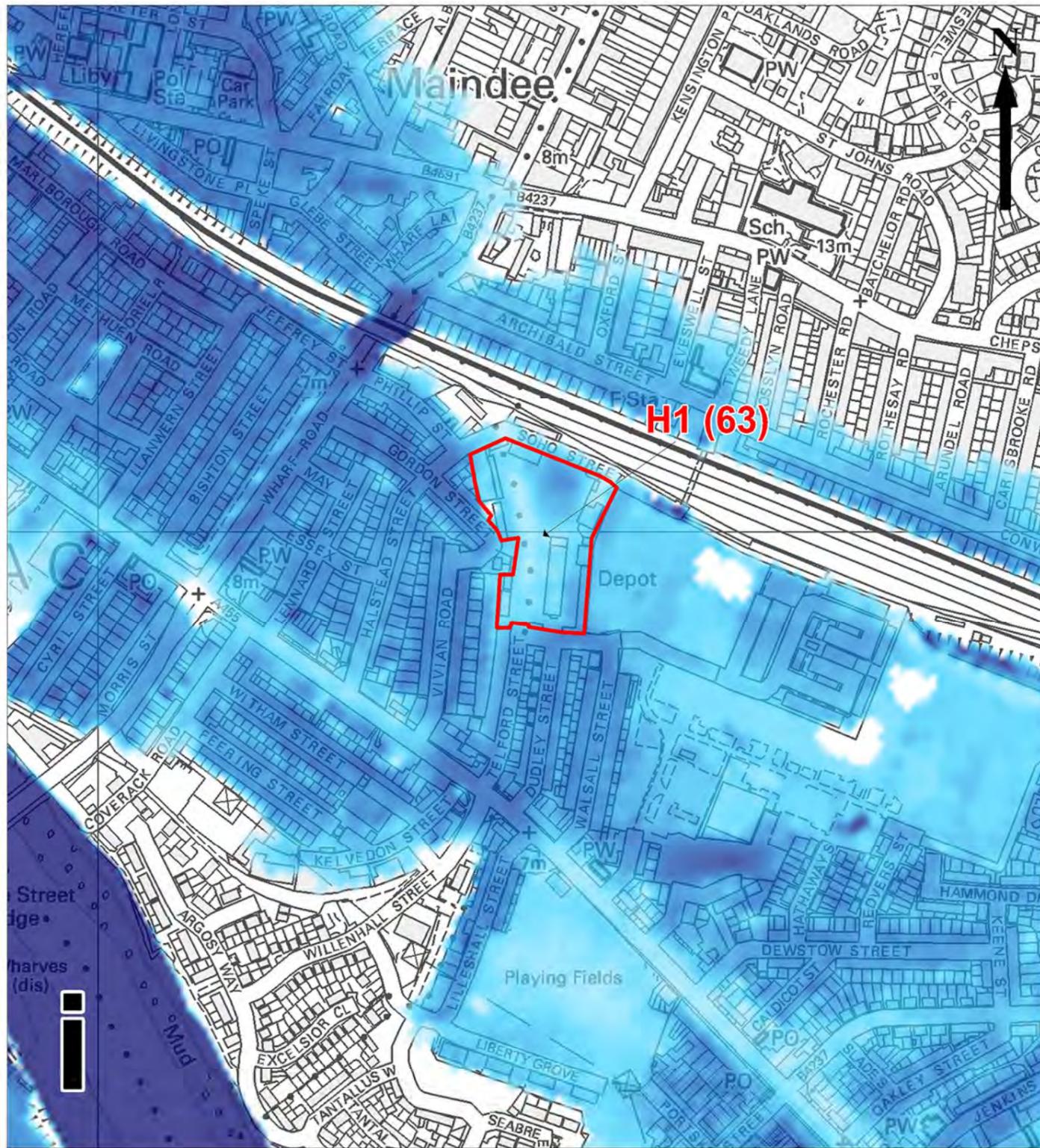
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| | | | |
|---------------------------------|---------------------------|------------------------|---------------------------|
| Scale at A3: 1: 5,000 | Date: Sept 2014 | Drawn by: RM | Approved By: MC |
|---------------------------------|---------------------------|------------------------|---------------------------|

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Figure B-1: Scenario 1 (1 in 200 year event)
(i) Maximum Flood Depth (ii) Maximum Flood Hazard



Depth Legend

 Additional Housing Allocation H1 (63)

Maximum Flood Depth (m)



Hazard Legend

 Additional Housing Allocation H1 (63)

Maximum Flood Hazard

 Low  Significant
 Moderate  Extreme

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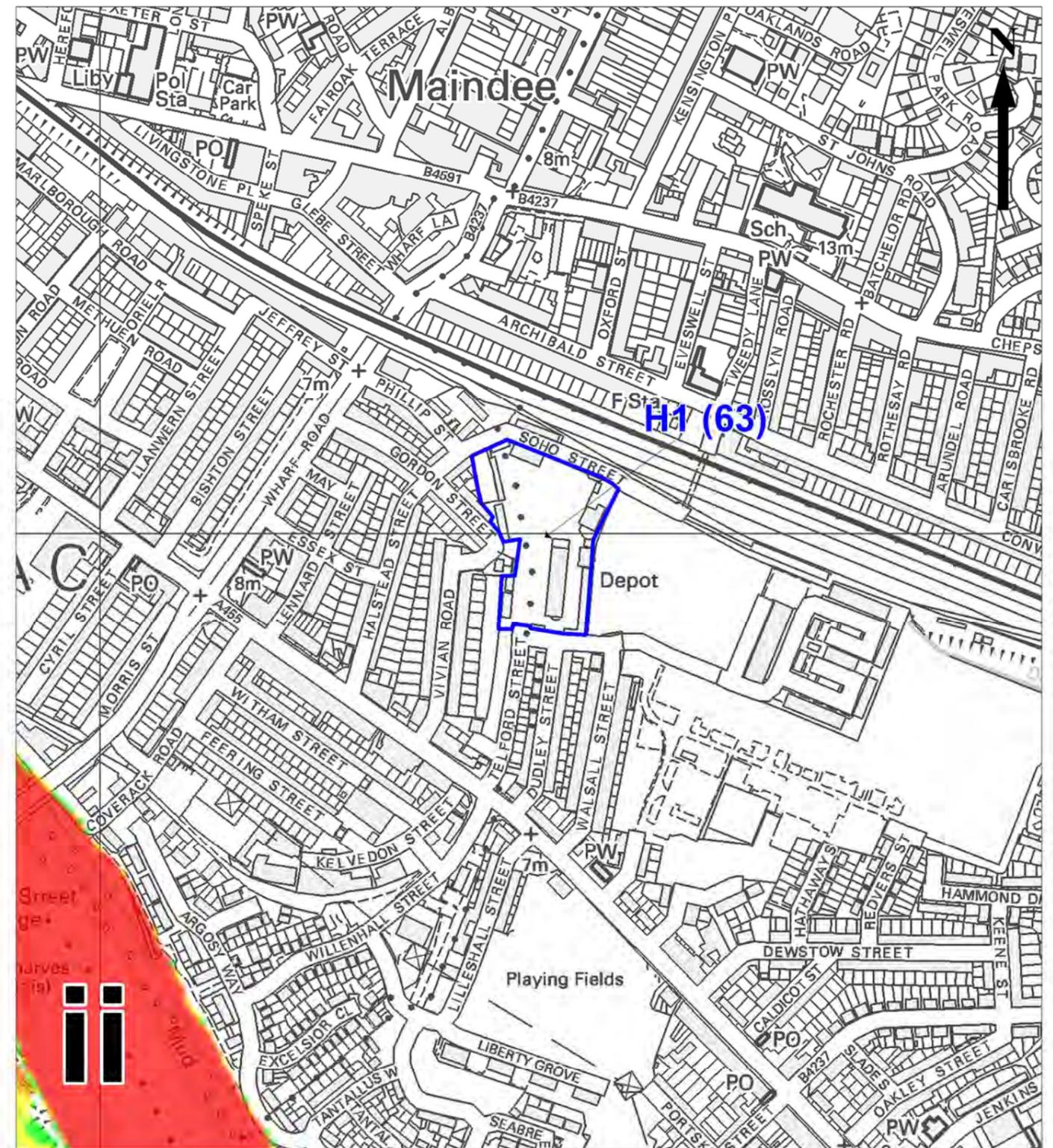
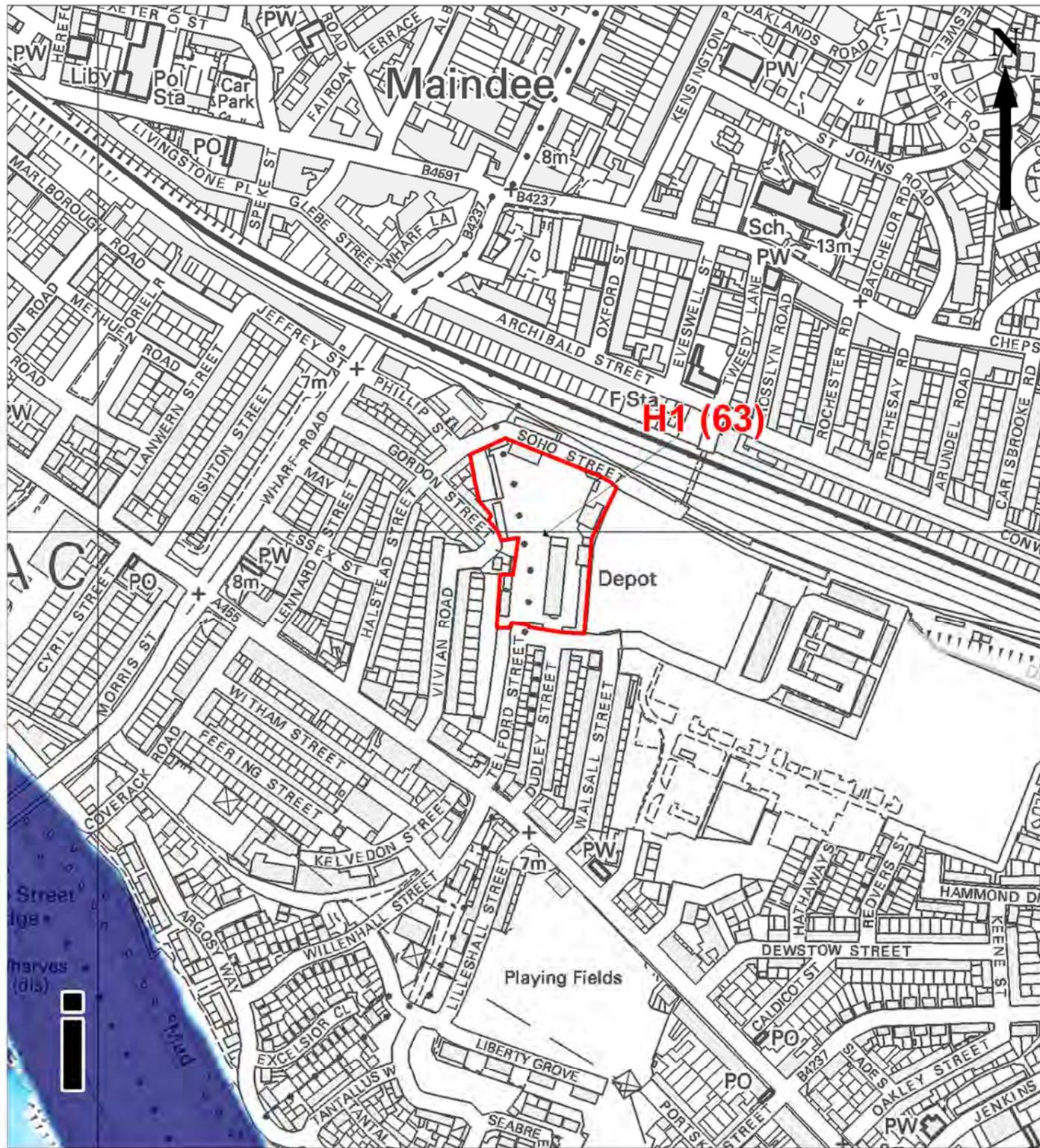
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| Scale at A3: | Date: | Drawn by: | Approved By: |
| 1: 5,000 | Sept 2014 | RM | MC |

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Figure B-2: Scenario 3 (1 in 200 year event - climate change 2111)
(i) Maximum Flood Depth (ii) Maximum Flood Hazard



Depth Legend

 Additional Housing Allocation H1 (63)

Maximum Flood Depth (m)



Hazard Legend

 Additional Housing Allocation H1 (63)

Maximum Flood Hazard

 Low  Significant
 Moderate  Extreme

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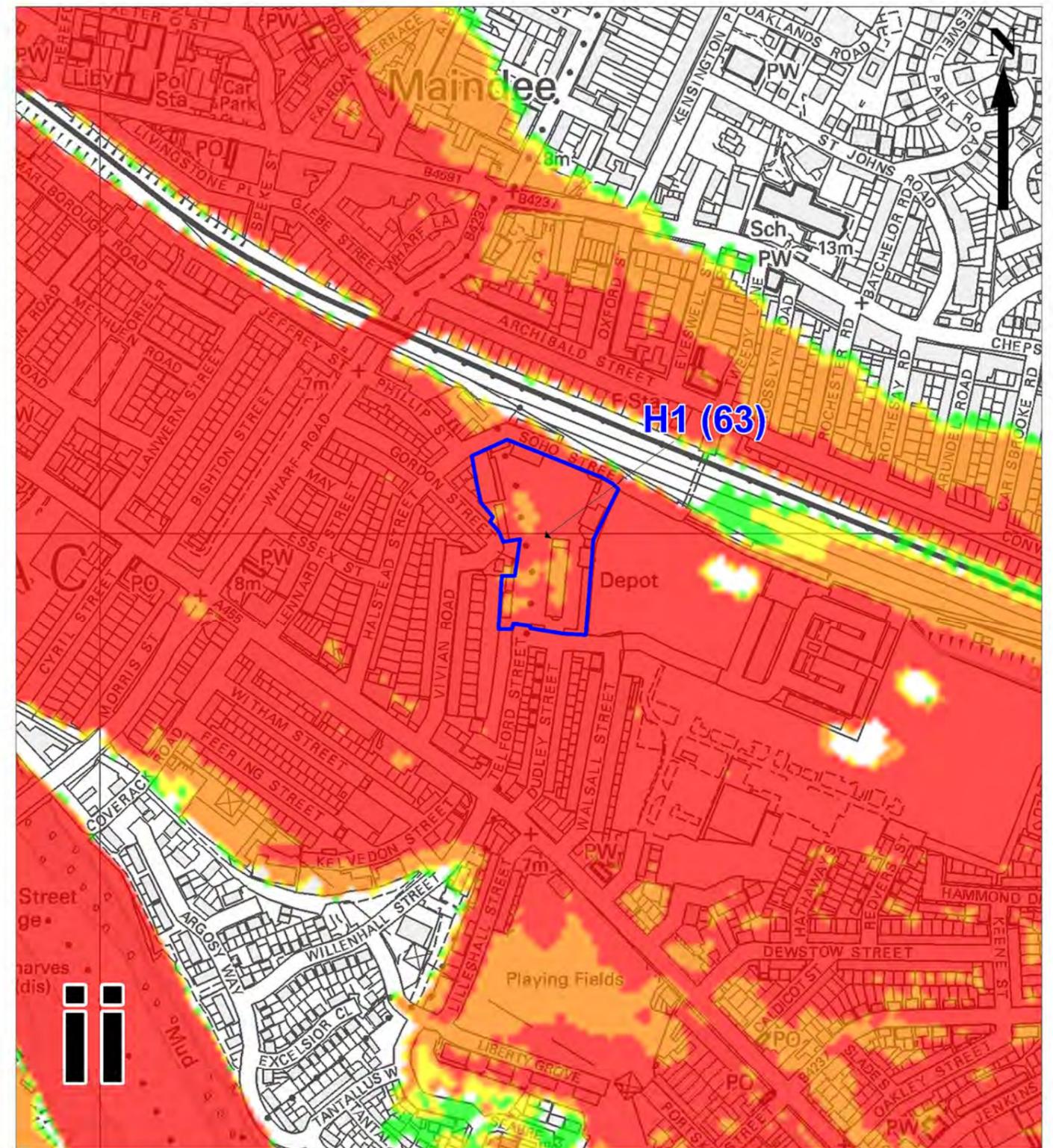
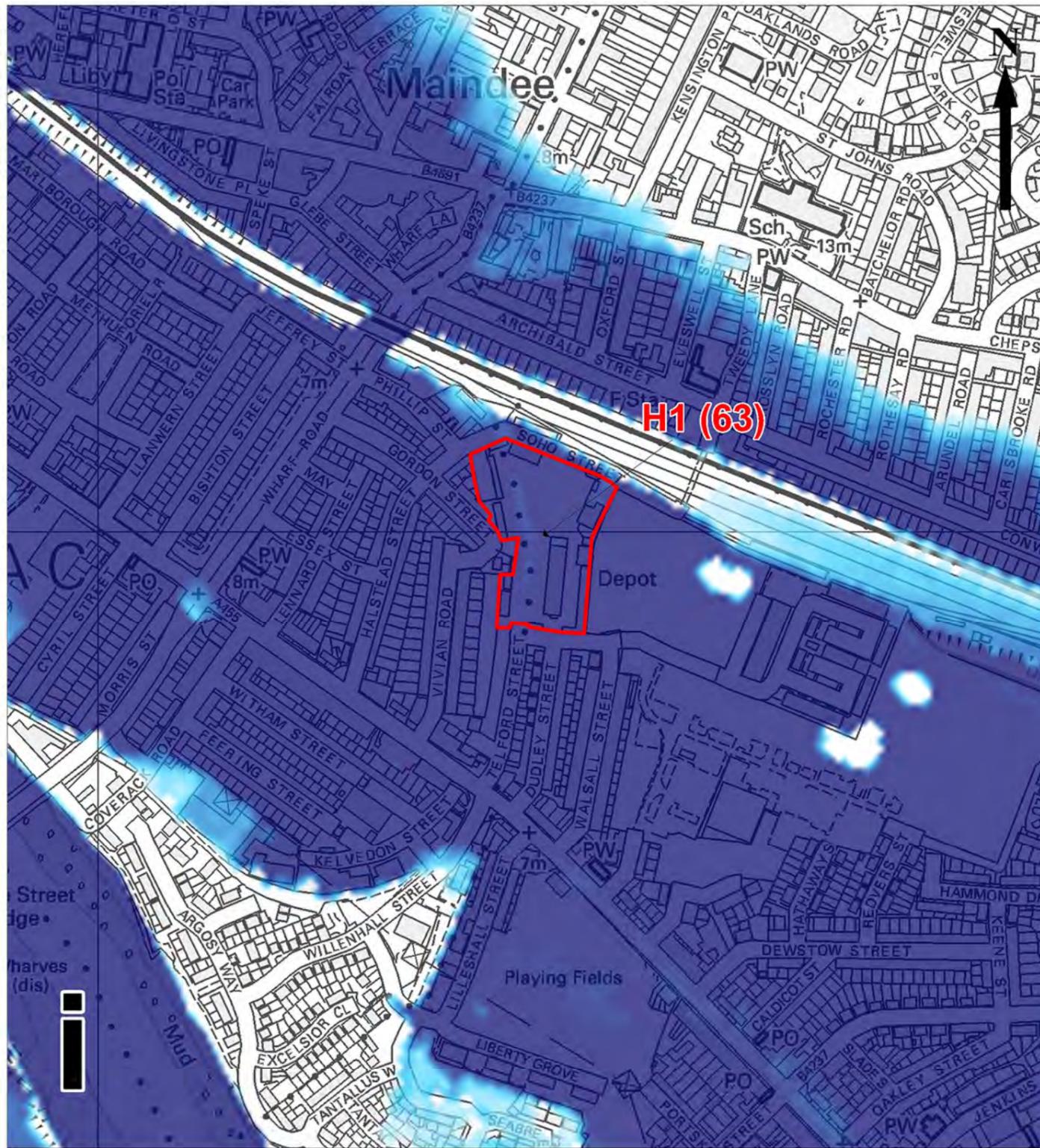
Approved By:
MC

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Figure B-3: Scenario 4 (1 in 1000 year event)
(i) Maximum Flood Depth (ii) Maximum Flood Hazard



Depth Legend

Additional Housing Allocation H1 (63)

Maximum Flood Depth (m)



Hazard Legend

Additional Housing Allocation H1 (63)

Maximum Flood Hazard

Low Significant
 Moderate Extreme

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Date:
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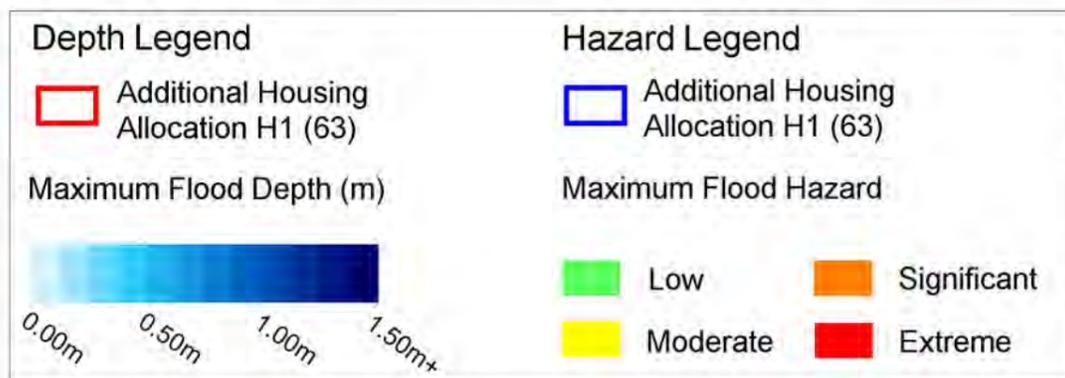
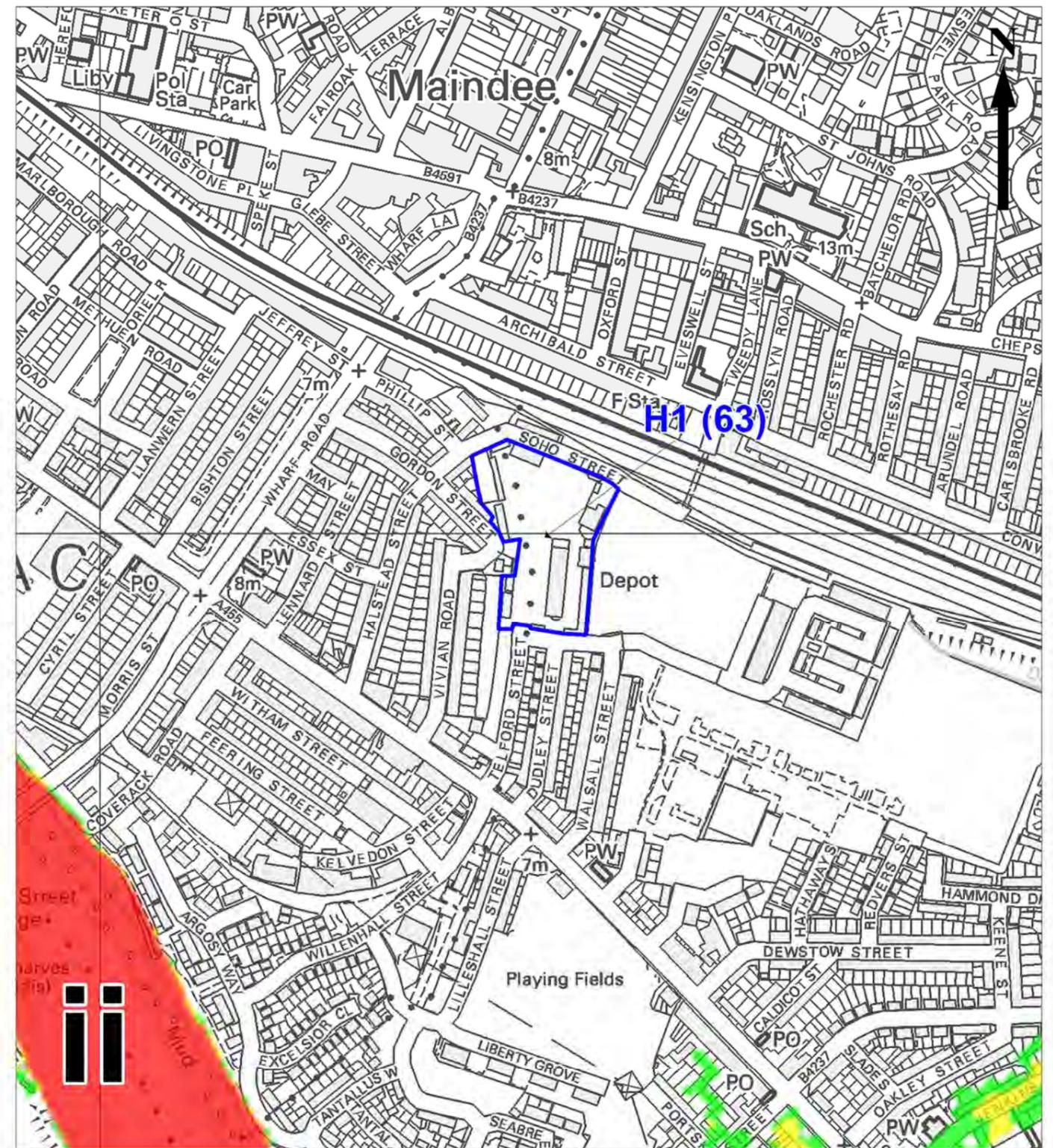
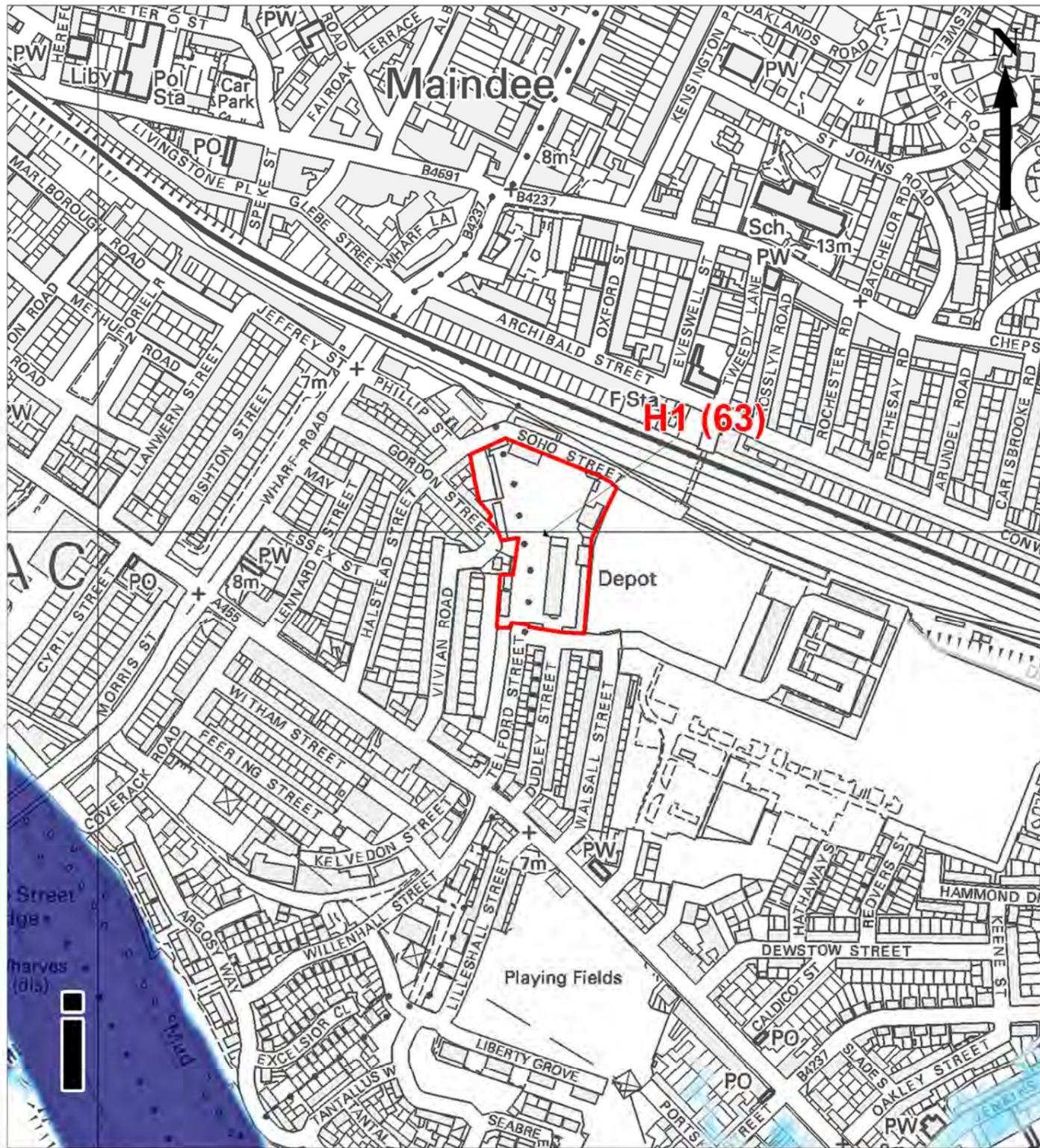
Approved By:
RS

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Figure B-4: Scenario 6 (1 in 1000 year event - climate change to 2111)
(i) Maximum Flood Depth (ii) Maximum Flood Hazard



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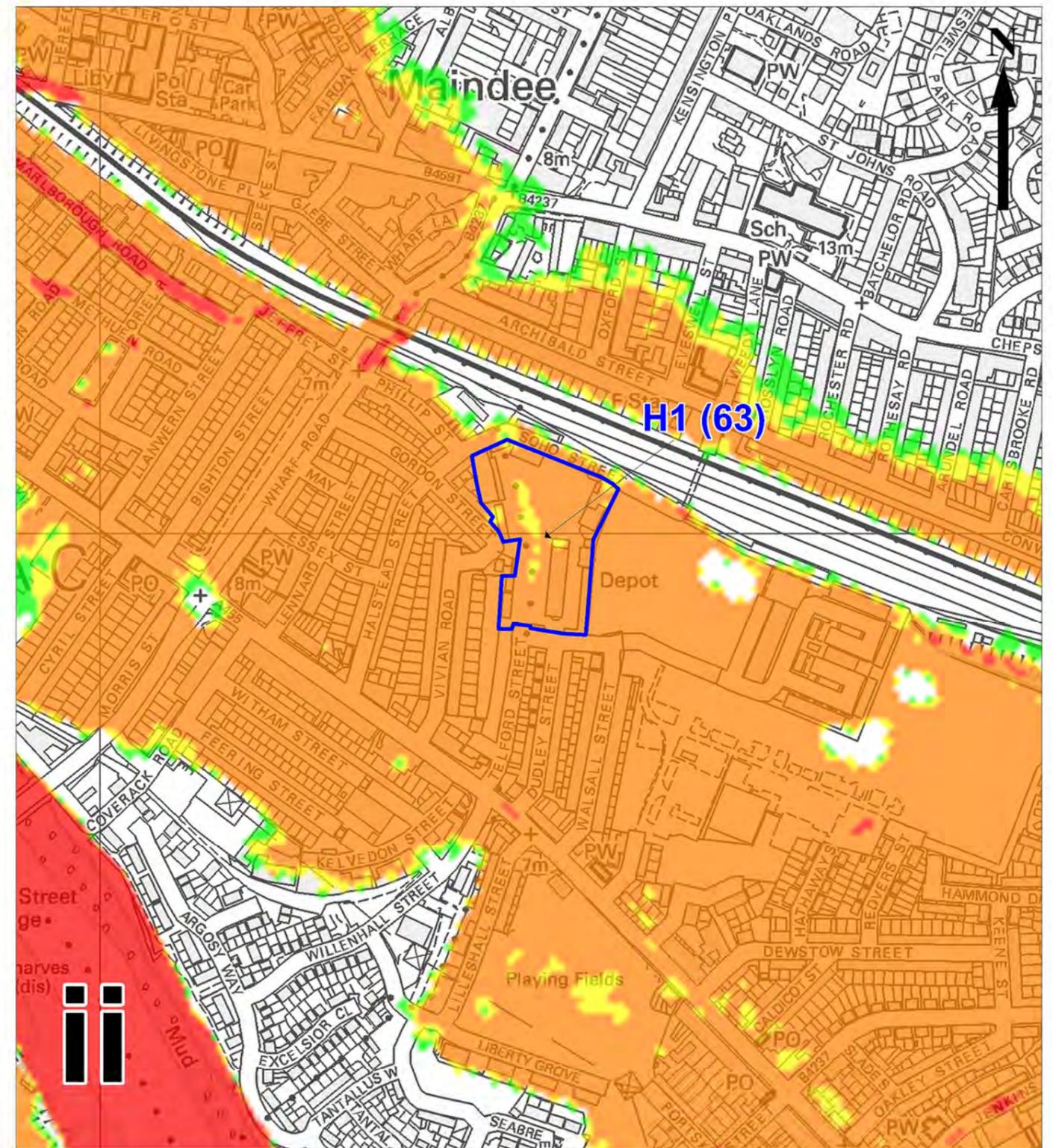
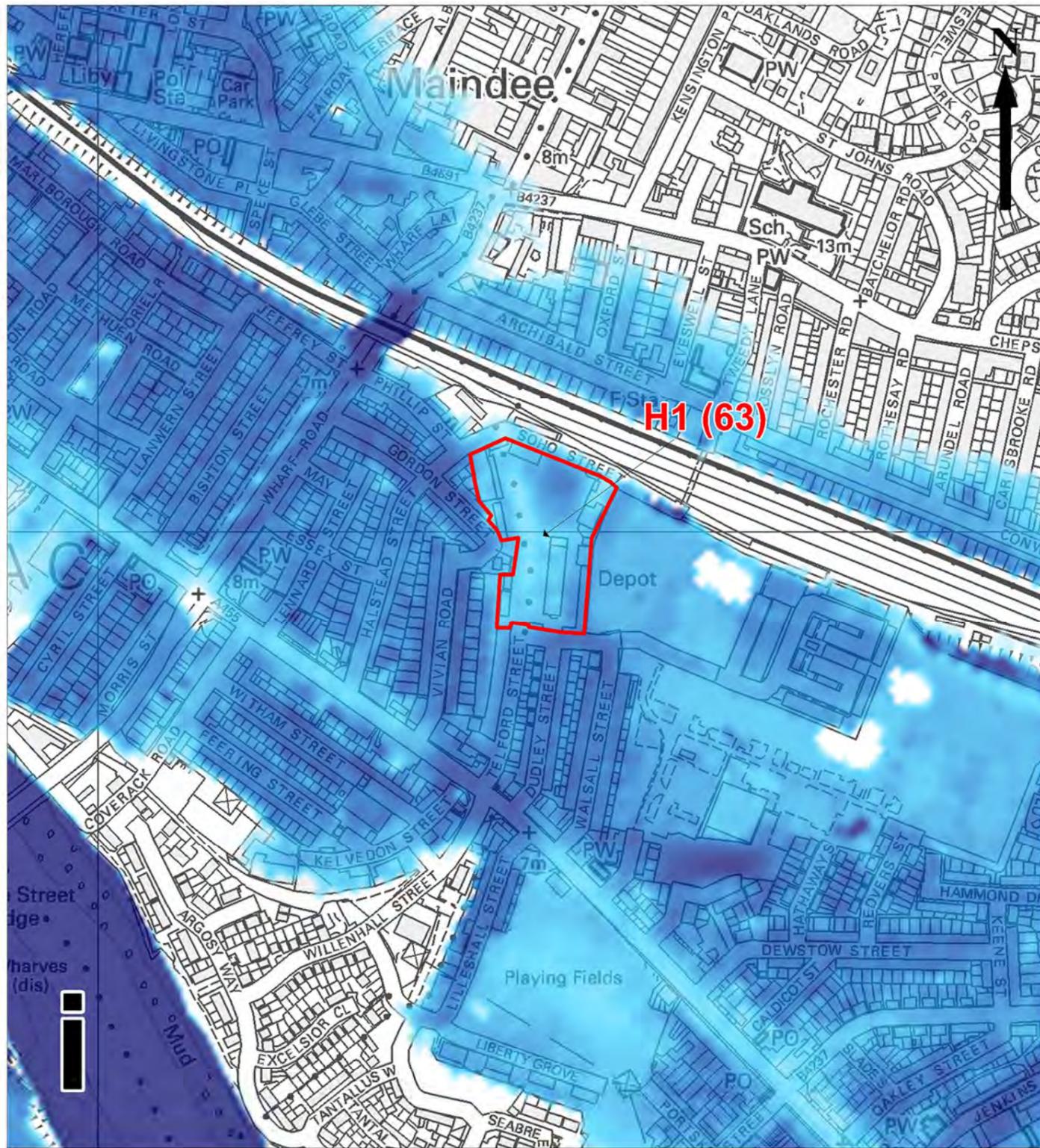
| | | | |
|--------------------------|--------------------|-----------------|--------------------|
| Scale at A3: 1: 5,000 | Date: Sept 2014 | Drawn by: RM | Approved By: MC |
|--------------------------|--------------------|-----------------|--------------------|

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Figure B-5: Scenario 7 (1 in 200 year event with Breach Location)
(i) Maximum Flood Depth (ii) Maximum Flood Hazard



Depth Legend

 Additional Housing Allocation H1 (63)

Maximum Flood Depth (m)



Hazard Legend

 Additional Housing Allocation H1 (63)

Maximum Flood Hazard

 Low  Significant
 Moderate  Extreme

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| | | | |
|--------------------------|--------------------|-----------------|--------------------|
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Figure B-6: Scenario 9 (1 in 200 year event - climate change to 2111 with Breach Location). (i) Maximum Flood Depth (ii) Maximum Flood Hazard