



Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL – SITE SELECTION

Technical Summary

Update on Activities Undertaken Between August 2022 and August 2023



Hywel Dda University Health Board

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Technical Summary

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1 INTRODUCTION

- 1.1.1. Hywel Dda University Health Board instructed BDP & WSP in early 2023 to undertake further due diligence assessments to support their development aspirations for the following potential sites:
- Spring Gardens Whitland (formerly Site 12)
 - Ty Newydd Whitland (formerly Site C)
 - St Clears (formerly Site 17)
- 1.1.2. The sites have significant constraints and opportunities which will affect the Health Board's decision making relating to infrastructure provision, master planning and the selection of the most appropriate site.
- 1.1.3. In order to assess the key environmental and engineering risks associated each site, the following technical areas were considered in more detail for each of the sites:
- Transport Modelling
 - Highway & Active Travel Infrastructure
 - Drainage
 - Utilities/Energy Strategy
 - Topographical Surveys
- 1.1.4. Further detail is given in the following sections of this report, with key outputs and deliverables provided in Appendices A to E.

2 TRANSPORT

2.1 TRIP GENERATION

- 2.1.1. In order to establish the trips associated with the new hospital, the reduction in arrival and departure flows for each existing hospital were redistributed to whichever of the potential site location was being assessed.
- 2.1.2. Using the re-distributed trips, and not accounting for any reduction which will clearly need to be achieved as demanded by both the Transport Strategy and Planning Policy, the capacity of the proposed sites accesses and a selection of existing local junctions could then be assessed once the base model is complete.
- 2.1.3. Refer to the technical note in Appendix A for full details.

2.2 BASE MODEL

- 2.2.1. To assist with the due diligence of each of the sites, the South-West and Mid-Wales Transport Model (SWMWMTM) was used to assess the impacts of the planned Urgent and Planned Care Hospital on traffic and travel patterns. The SWMWMTM is a regional, multi-modal transport model, and comprises: a highway assignment component representing travel by car (business, commute and other purposes), and road freight (light goods vehicles (LGVs) and heavy goods vehicles (HGVs)); a public transport assignment component including bus, rail and national coach services; and a variable demand model (VDM). It has a base year of 2019 and represents a neutral month of October.
- 2.2.2. A Technical Note was prepared summarising a review of the South-West and Mid-Wales Transport Model (SWMWMTM) focusing on the area around, and within the towns Whitland and St Clears associated with the delivery of three proposed sites. A further technical note was prepared which detailed minor refinements which were applied to the model.
- 2.2.3. Following updates (modest network enhancements are proposed to address inaccuracies in the highway model and to bring both models closer to representing the transport network in 2023), across both highway and PT assignment models, SWMWMTM is a good representation of the transport network with the Area of Focus (AoF) in 2019 (the model base year).
- 2.2.4. Model calibration and validation has generally been shown to be acceptable (where available), but it is noted that the available data only facilitates a partial picture of the model's ability to represent current conditions.
- 2.2.5. It is therefore considered that SWMWMTM is a robust tool assess the following:
 - Local and strategic growth within the AoF
 - Routing for trips generated by the proposed site (subject to an appropriate distribution being supplied and realistic trip generation)
 - Approximate mode split for proposed site
- 2.2.6. However, careful consideration should be taken when attempting to extract the following from the model
 - Turning movements for base year and in future

- Detailed network performance at the local junction level

2.2.7. Refer to technical note *SWMWTM Review Technical Note v2.0* and *SWMWTM Update Technical Note v3.0* in Appendix A.

2.3 TRAFFIC SURVEY

2.3.1. In a previous study, WSP demonstrated the potential impact that a new hospital would have on the transport network in 2027 at each of the proposed sites.

2.3.2. This was calculated by redistributing and redirecting a percentage of traffic movements from each of the existing hospitals to the new sites instead, using staff postcode data to establish origins for trips to the hospitals. Before the redistributed traffic flows were added to the network, baseline traffic flows needed to be obtained to provide a comparison for the net change in traffic because of the proposed hospital. For the initial assessment, the source data of these base flows was as follows:

- Traffic data from a local Transport Assessment carried out in 2017 (used in conjunction with NOMIS data (Census 2011)) used to gain an understanding of the current baseline situation at St Clears.
- For Whitland, there was a lack of survey data for the exact locations of the proposed sites, so data from a Transport Statement by Jubb (2014) and an AADT Survey conducted by DfT (2018) were used to establish baseline traffic flows. NOMIS (Census 2011) (place of residence) and work data was also used to calculate the percentage of journeys travelling to the East and the West of Whitland and applied to this data given that the survey results were for sections of the highway only (rather than establishing the directional movements of the traffic).

2.3.3. Following the initial assessment, WSP has commissioned traffic surveys at the proposed site locations and the corresponding network, in line with the original assessment. The commissioned surveys provide a more accurate understanding of the current traffic flows at the sites, and more accurately informs the impact on the network.

2.3.4. The surveyed traffic flows demonstrate that, at all sites, the calculated base flows were mainly overestimated. While the overall impact in terms of congestion will be less, the percentage impact of the hospital traffic relative to the background traffic will likely be higher.

2.3.5. The percentage impacts are generally in line with those presented in the original scope of work; however, some locations are observed to have a higher percentage impact than previously demonstrated, as is to be expected with a lower base traffic flow.

2.3.6. Refer to technical note *Hywel Dda – Updated Traffic Counts* in Appendix A.

2.4 JUNCTION MODELLING

2.4.1. Traffic flows from SWMWTM and observed traffic data have been used to complete junction modelling in the vicinity of three alternative proposed Urgent and Planned Care Hospital sites.

2.4.2. Five of the six junctions are existing and one new proposed roundabout, providing access to site 12.

2.4.3. Six locations have been tested in total using Junctions 10 software using the forecast flows from 2029 on a typical neutral weekday in the AM and PM peak hours taken from SWMWTM. The

assessments have shown that there are a range of impacts on the road network around Whitland and St Clears. Generally, these impacts do not impact on the levels of service at each of the six junction locations on a neutral weekday.

- 2.4.4. On a neutral weekday, the main exception is the access junction on the B4328 to the east of Whitland (junction 3) when Site C is brought forward. Poor levels service are predicted on the minor arm leading into the development site only, with good levels of service in both directions on the B4328, however this could be addressed by the introduction of a signal controlled junction.
- 2.4.5. Following completion of the assessment, it is proposed to further test the junction with summer peak profile traffic, to understand the level of impact on the road network.
- 2.4.6. Refer to technical note *SWMWTM Forecasting Technical Note v2.0* and *Junction Modelling Technical Note v2.0* in Appendix A.

3 HIGHWAYS & ACTIVE TRAVEL INFRASTRUCTURE

3.1 ACCESS DESIGN

- 3.1.1. Outline highway access proposals have been developed for the site, with Emergency/Blue light access also considered.
- 3.1.2. In most instances highway access would be provided within existing highway land or site boundary but in some instances additional land is required.
- 3.1.3. The design proposals have been based on Ordinance Survey information, but consideration was given to the topography of the land.
- 3.1.4. The highway accesses have been designed to be compliant with current DMRB standards and subject to Section 278 agreement between the Health Board and the local highway authority.
- 3.1.5. Liaison and conversations have been held with both the South Wales Trunk Road Agency SWTRA and Carmarthenshire County Council to inform the access proposals.
- 3.1.6. Drawings showing the highway access proposals for each of the three sites are provided in Appendix B.

3.2 ACTIVE TRAVEL

- 3.2.1. Active travel routes have been considered for the site, to provide connectivity between the sites and key public transport interchanges, and the wider active travel network.
- 3.2.2. Where possible 3m wide shared use routes will be provided. Alternatively, cyclists will be on road and footways will be widened as much as reasonably practical.
- 3.2.3. Active travel routes have mostly been identified within current Carmarthenshire County Council highway land but in some instances 3rd party land is required, which has been identified on proposals.
- 3.2.4. The proposals are based on recent topographical survey information and consider local constraints.
- 3.2.5. Where possible Active Travel Act Guidance 2021 has been applied, with proposals subject to a Section 278 agreement between the Health Board and the local highway authority.
- 3.2.6. Liaison and conversations have been held with both the South Wales Trunk Road Agency and Carmarthenshire County Council, to inform the active travel proposals.
- 3.2.7. Drawings showing the active travel proposals for each of the three sites are provided in Appendix B.

4 DRAINAGE

4.1 SURFACE WATER DRAINAGE

- 4.1.1. Existing drainage, watercourses and catchments were identified from the topographical and drainage surveys that were commissioned in 2023, to confirm the existing drainage regime for each of the three sites.
- 4.1.2. Following the receipt of the topographical survey, the previous concept surface water drainage strategies were reviewed and previously assumptions confirmed.
- 4.1.3. To mimic the existing drainage scenario, the site will drain through an onsite SuDS network to surface level attenuation basins, where the flow is restricted to greenfield runoff rates before discharging into existing watercourses.
- 4.1.4. Based on the concept masterplan, assumptions around proposed catchments and impermeable areas were used to calculate preliminary attenuation volumes.
- 4.1.5. The location and form of surface water outfalls from the sites, and their connection to existing watercourses has also been considered in more detail such that any additional land requirements can be defined. The outfalls will generally be open channels/ swales connecting to existing watercourses. A typical 3m easement from the top of bank has been allowed, to ensure adequate room for construction, access and future maintenance.
- 4.1.6. A detailed hydraulic assessment of each outfall is required during the design of the detailed drainage strategy and confirmation of the final proposed discharge rates from each attenuation basin.
- 4.1.7. Proposed drainage strategy and potential outfall drawings are provided in Appendix C.

4.2 HYDRAULIC MODELLING ASSESSMENTS

- 4.2.1. Since the proposed development will result in an increase in both water supply demands and foul flows discharging to the local public foul water drainage system sewer network.
- 4.2.2. Consultation with the sewerage undertaker, Dwr Cymru Welsh Water (DCWW), it was confirmed that the public water and sewerage network is unlikely to have available capacity to supply sufficient water and receive the additional foul flow from the site.
- 4.2.3. DCWW have been instructed to undertake hydraulic modelling assessments to confirm the capacity and detriment to the following existing infrastructure:
 - Public water supply network
 - Public sewerage network
 - wastewater treatment works
- 4.2.4. Six HMA's will be carried out by DCWW. Three for St Clears (Site 17) and three for Whitland (Site 12 & C for which the different sites will be considered as separate scenarios on the same general network).



- 4.2.5. The HMA's are likely to confirm the need for public infrastructure upgrades. This could involve upsizing water pipes and sewers and local pumping stations, as well as increasing capacity at the local wastewater treatment works.
- 4.2.6. Discussions with DCWW are ongoing as the HMA's progress.

5 UTILITIES

5.1 ENERGY/CARBON STRATEGY

- 5.1.1. An energy generation strategy was developed for both on and off-site solutions along with minimum targets including operational energy decarbonisation aspirational targets to enable a clear design brief for OBC stage design.
- 5.1.2. The full details of the Strategy can be found in Appendix D.

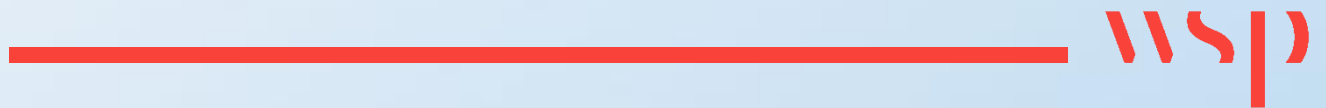
6 TOPOGRAPHICAL & DRAINAGE SURVEY

- 6.1.1. Topographical and drainage surveys have been undertaken for each of the three sites, and existing (or potential future) highways/active travel routes adjacent to the sites.
- 6.1.2. This has confirmed the location and details of existing topography, roads, buildings, vegetation, and constraints, as well as watercourse and below ground drainage, on and within the vicinity of the sites.
- 6.1.3. The surveys have been used in the recent active travel and drainage design work and will form the baseline for future detailed design.
- 6.1.4. Topographical and drainage survey drawings are provided in Appendix E.

APPENDICES PROVIDED SEPARATELY TO REDUCE FILE SIZE

Appendix A

TRANSPORT - TECHNICAL NOTES



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Appendix B

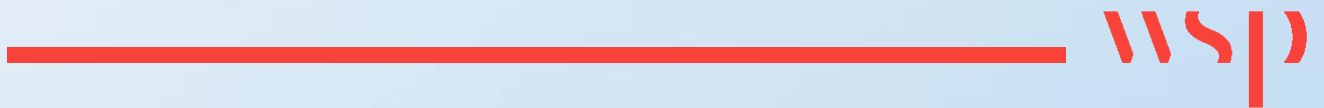
HIGHWAY - DRAWINGS



APPENDICES PROVIDED SEPARATELY TO REDUCE FILE SIZE

Appendix C

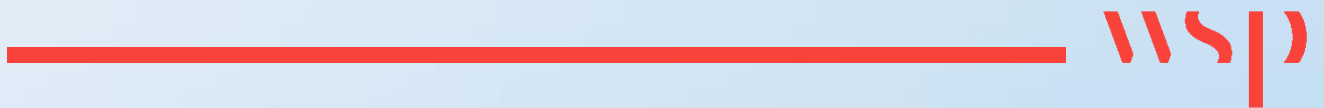
DRAINAGE - DRAWINGS



APPENDICES PROVIDED SEPARATELY TO REDUCE FILE SIZE

Appendix D

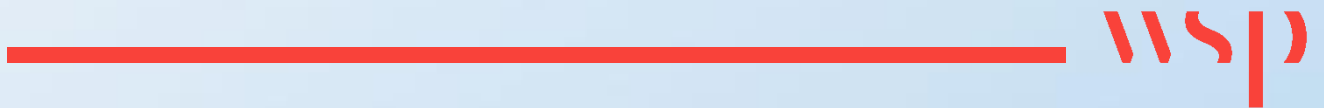
ENERGY STRATEGY



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Appendix E

TOPOGRAPHICAL SURVEY





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