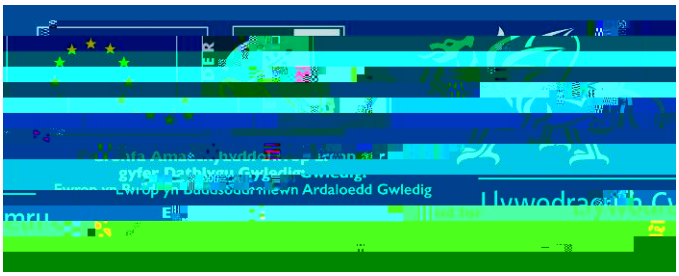
Pedestrian Movement Analysis

Pontarddulais ±Water St, Tidal Reach & Station Rd

May 2018



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Introduction

This report summarises pedestrian movement analysis undertaken at the crossroads of Water Street, Tidal Reach and Station Road in Pontarddulais as part of the Wales Rural Development Programme (RDP). There are three designated pedestrian crossings within the study area, two on Water Street and one on Tidal reach, these are visible in

Methodology

Data Collection

A pedestrian count was undertaken using video monitoring. Three video cameras were set up, on Station Road, Water Street and Tidal Reach, to capture pedestrian activity across four days in April 2018. These were a Tuesday, Wednesday, Thursday and Saturday. Video monitoring was undertaken for 12 hours, from 7am to 7pm on each of the four days. Only pedestrians have been counted. Cyclists on the road have not been counted and cyclists pushing bikes on the pavement have been counted as pedestrians.

A reference grid was superimposed onto the video footage as a means of tracking pedestrian movement through the study area. Each cell in the reference grid was 5 meters by 5 meters in size and was given a cell reference in the format (letter, number). Figure 2 below shows the location of the video cameras as well as the grid system that was superimposed onto the video footage.

Figure 2: Location of video cameras and reference grid

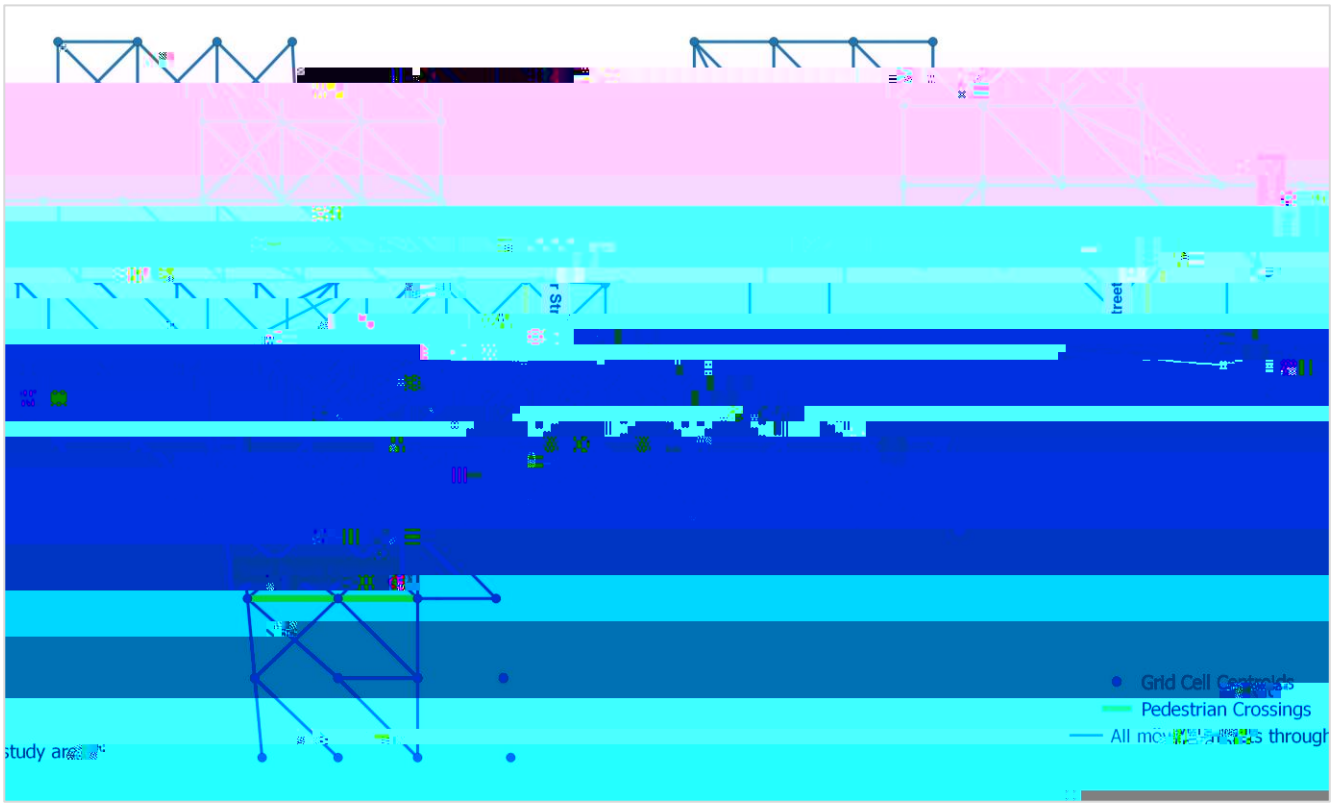
Analysis

Using the video footage data, the movement of each individual pedestrian was recorded according to which cell they entered the study area, which cells they moved through and at which cell they exited the study area.

Using GIS, a centroid (central point) for each grid cell was created. For each individual pedestrian movement that was recorded, a line was created to represent the pedestrian movement through the study area. This line links each centroid an individual moved through

Figure 3 below shows the centroid for each grid cell used for video monitoring. The dark blue lines represent the movements made through the study area, but not the number of people making each movement at this stage. Each line in Figure 3 illustrates a movement made by at least one pedestrian through adjacent grid cells. The location of the pedestrian crossings within the grid system are highlighted yellow.

Figure 3: Location of pedestrian crossings within grid system used for analysis and all movements recorded through study area



Limitations

8VLQJ WKLV DSSURDFK LW¶V RQO\ SRVVLEOH WR WUDFN KDSVHQ¶W W been possible to collect additional information such as crossing times, waiting times, vehicle yielding behaviour or traffic volumes that may have affected pedestrian movements as this would be too time intensive and may require a different data collection approach (manual recording or different camera position).

The scope of the study area has been set to include all three designated pedestrian crossings but not any wider due to the additional time analysing data from a larger area would take. This means that we cannot observe any behaviour outside the study area which may influence how individuals move through the study area and across the junctions. The analysis is also only as detailed as the size of the grid cells allows. If the grid reference cell size had been set any smaller the level of detail in the analysis would increase, but this would also increase the analysis time required.

Data from the video monitoring was manually entered into Excel before being entered into a GIS. As a result, there is a small possibility of human error.

Figure 5: Number of people making the same movements across all survey days

, W ¶ V H Y L Figure 5 that the most frequently observed movements through the study area occurred on the northern side of Water Street. T

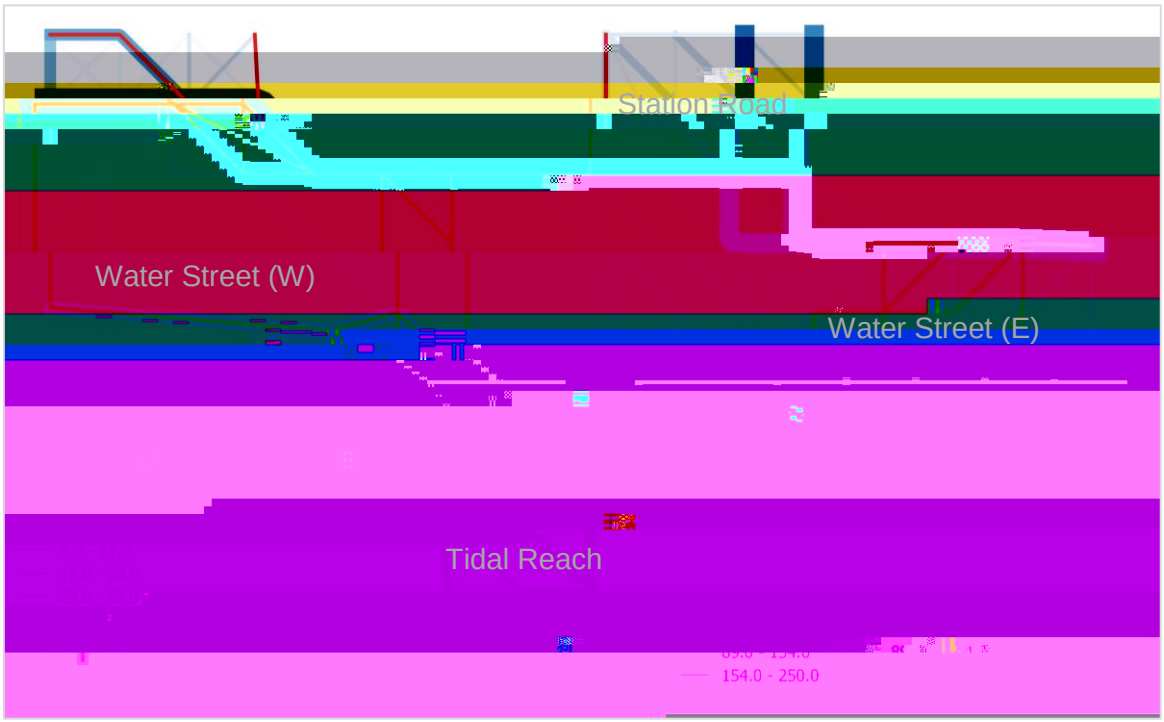
Figure 7: Second most popular movement through study area

Designated Pedestrian Crossings

Tidal Reach

Figure 9 shows all movements that passed through the designated pedestrian crossing on Tidal Reach indicated in red. There were a total of 53 different movements made by 375 people. 24 of the movements crossed both Tidal Reach and another road either at another designated crossing or an undesignated crossing. None of the movements using Tidal Reach crossing crossed more than two roads of the study area.

Figure 9: Movements that pass through the designated crossing on Tidal Reach



Figures 9 to 11 show the most popular movements using the designated crossing on Tidal Reach.

Figure 10 highlights one of the most popular movements that passes through the crossing on Tidal Reach, made by 47 people. This movement moves from the southern side of Water Street, across Tidal Reach and then down Tidal Reach on the eastern side of the road, or vice versa.

Figure 10: Joint most popular movement that passes through the designated crossing on Tidal Reach

The movement through the Tidal Reach crossing in Figure 10 was also made by 47 people. This movement follows the southern side of Water Street with pedestrians moving south to the Tidal Reach crossing to enable them to continue their movement along the southern side of Water Street.

Figure 11: Joint most popular movement that passes through the designated crossing on Tidal Reach

Figure 12 shows

Water Street (west)

Figure 13 shows all movements that passed through the western designated pedestrian crossing on Water Street. There were a total of 35 different movements made by 45 people. All except four

Figure 14: Joint most popular movement passing through the designated western crossing on Water Street

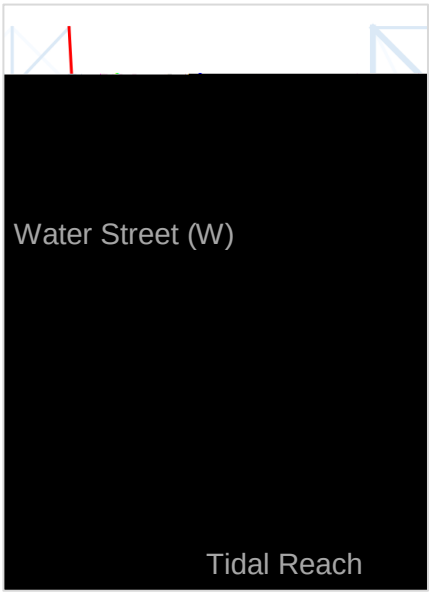
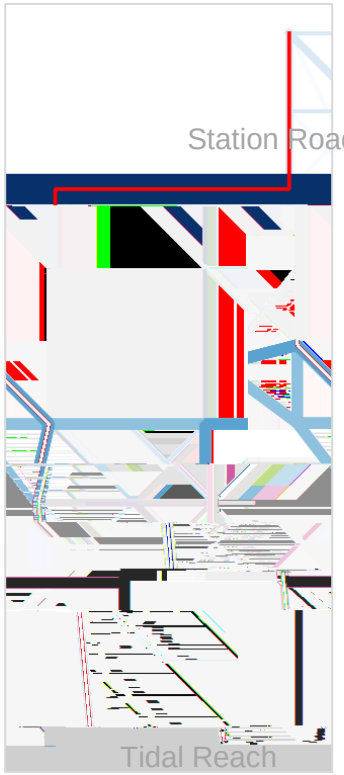


Figure 15 shows another frequent movement through the western Water Street crossing, also made by 3 people. This movement starts at the eastern side of Station Road, crosses Station Road and Water Street runs down the western side of Tidal Reach, or vice versa.

Figure 15: Joint most popular movement passing through the designated western crossing on Water Street



All other movements across the western Water Street crossing were made by only one or two people.

Figure 17 highlights the most popular movement that passes through the eastern Water Street crossing, made by 10 people. This movement follows the northern side of Water Street, crossing both

Figure 20: Pedestrians crossing Station Road at undesignated crossing

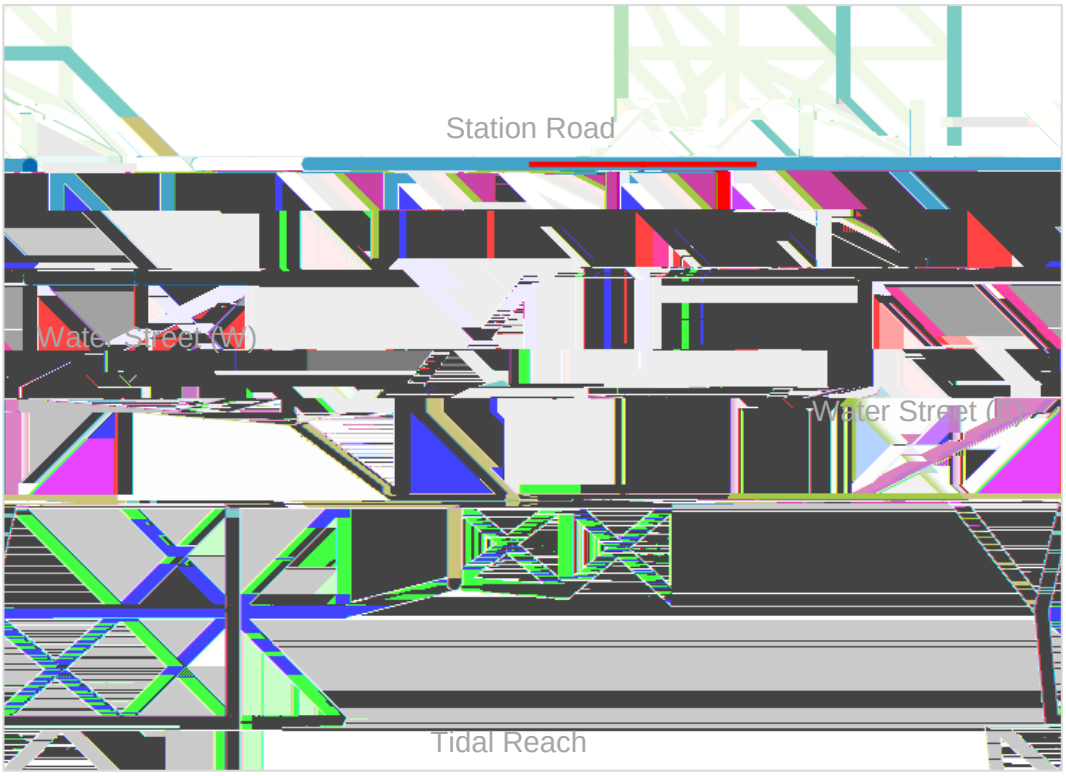


Figure 9 identifies 375 people who have used the designated crossing at Tidal Reach to move through the study area. The heat map shows that a further 159 pedestrians cross Tidal Reach at the undesignated crossing points highlighted in Figure 21.

Figure 21: Pedestrians crossing Tidal Reach at undesignated crossings

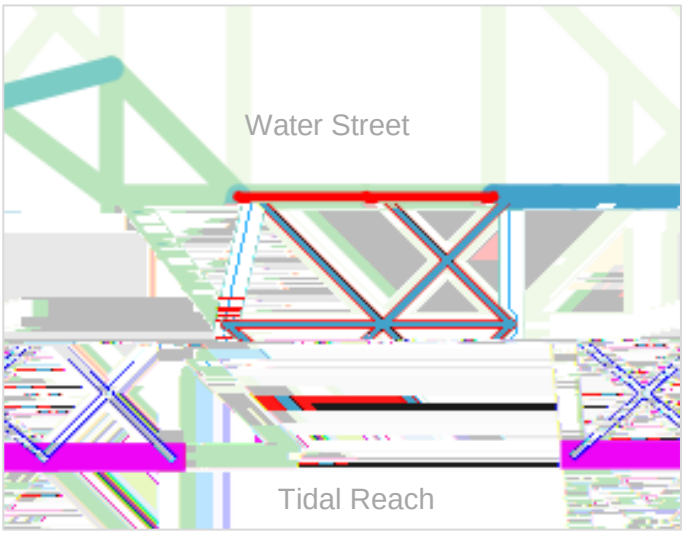


Figure 13