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Client: Carlton Vale Investment Company Limited

Flood Risk Assessment for the Proposed Development at The Courtyard, Wisley Lane, Wisley, Surrey

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1 Background and Scope of Appraisal

Flooding is a major issue in the United Kingdom. The impacts can be devastating in terms of the cost of repairs, replacement of damaged property and loss of business. The objectives of the Flood Risk Assessment (FRA) are therefore to establish the following:

- whether a proposed development is likely to be affected by current or future flooding from any source.
- whether the development will increase flood risk elsewhere within the floodplain.
- whether the measures proposed to address these effects and risks are appropriate.
- whether the site will pass Part B of the Exception Test (where applicable).

Herrington Consulting has been commissioned by Carlton Vale Investment Company Limited to prepare a Flood Risk Assessment (FRA) for the proposed development at **The Courtyard, Wisley Lane, Wisley, Surrey, GU23 6QL.**

This appraisal has been undertaken in accordance with the requirements of the National Planning Policy Framework (2023) and the National Planning Practice Guidance Suite (August 2022) that has been published by the Department for Communities and Local Government. The *Flood Risk and Coastal Change* planning practice guidance included within the Suite represents the most contemporary technical guidance on preparing FRAs. In addition, reference has also been made to Local Planning Policy.

To ensure that due account is taken of industry best practice, this FRA has been carried out in line with the CIRIA Report C624 'Development and flood risk - guidance for the construction industry'.

2 Development Description and Planning Context

2.1 Site Location and Existing Development

The site is located at OS coordinates 505729, 159630, off Wisley Lane in Wisley. The site covers an area of approximately 0.87 hectares and the building onsite is currently used as office space. The location of the site in relation to the surrounding area and the River Wey is shown in Figure 2.1.



Figure 2.1 – Location map (contains Ordnance Survey data © Crown copyright and database right 2023).

The site plan included in Appendix A.1 of this report provides more detail in relation to the site location and layout.

2.2 Proposed Development

The proposals for development comprise the conversion of the existing office space (Class B1) into 13no. residential units (Class C3) (Figure 2.2).





Figure 2.2 – Proposed ground floor plan.

Drawings of the proposed scheme are included in Appendix A.1 of this report.

2.3 The Sequential Test and Exception Test

Local Planning Authorities (LPA) are encouraged to take a risk-based approach to proposals for development in or affecting flood risk areas through the application of the Sequential Test. The objectives of this test are to steer new development away from high risk areas towards those areas at lower risk of flooding. However, in some locations where developable land is in short supply there can be an overriding need to build in areas that are at risk of flooding. In such circumstances, the application of the Sequential Test is used to ensure that the lower risk sites are developed before the higher risk ones.

In this circumstance the proposed development is for the change of use of the existing building from offices to residential units. Paragraph 168 of the National Planning Policy Framework (NPPF) states that such applications need not be subject to the Sequential Test and therefore, by default the Exception Test is not required either.

Notwithstanding this, in accordance with The Town and Country Planning (General Permitted Development) (England) Order 2015, the change of use of a building from commercial use to residential use is subject to prior approval from the Local Planning Authority, with respect to flood risk. Additionally, the NPPF requires all development located within Flood Zones 2 and 3 to be

subject to a site-specific FRA and to meet the requirements for flood risk reduction. The following assessment identifies that the subject site is located within Flood Zone 2 and 3 (Figure 2.3) and therefore the primary focus of this document is to appraise the risk of flooding from all key sources.



Figure 2.3 – EA's 'Flood Map for Planning' (© Environment Agency).

3 Definition of Flood Hazard

3.1 Site Specific Information

Information from a wide range of sources has been referenced to appraise the true risk of flooding at this location. This section summarises the additional information collected as part of this FRA.

Site specific flood level data provided by the EA – The EA has provided the model results of the River Wey Modelling and Mapping Study carried out in 2018 (by others), which have been referenced as part of this appraisal.

Information contained within the SFRA – The Guilford Borough Council SFRA (2016) contains detailed mapping showing historic flood records for a wide range of sources. This document has been referenced as part of this site-specific FRA.

Information on localised flooding contained within the SWMP – A Surface Water Management Plan (SWMP) is a study to understand the risk of flooding that arises from local surface water flooding, which is defined by the Flood and Water Management Act 2010 as flooding from surface runoff, groundwater, and ordinary watercourses. Such a document has been prepared for Guildford Borough Council (2014) and has therefore been referenced as part of this site-specific FRA.

Information provided by Thames Water - Thames Water has provided the results of an asset location search for the site. The response is included in Appendix A.2.

Site specific topographic surveys – A topographic survey has been undertaken for the site and a copy of this is included in Appendix A.1. From the survey, it can be seen that the level of the site varies between 16.6m and 18.6m Above Ordnance Datum Newlyn (AODN). The land levels on site are relatively flat, with a gentle fall towards the north. The finished floor levels of the existing building vary between 17.06m and 17.26m AODN.

Geology – Reference to the British Geological Survey (BGS) map shows that the underlying solid geology in the location of the subject site is Bagshot Formation (sand). Overlying this are superficial deposits of Kempton Park Gravel Member (sand and gravel).

Historic flooding – Information provided within the SFRA, SWMP and the EA's 'Recorded Flood Outlines' GIS mapping layer shows that there are no recorded incidents at the site or immediate surrounding area.

3.2 Potential Sources of Flooding

The main sources of flooding have been assessed as part of this appraisal. The specific issues relating to each one and its impact on this development are discussed below. Table 3.1 at the end of this section summarises the risks associated with each of the sources of flooding.

Flooding from Rivers, Ordinary and Man-Made Watercourses – OS mapping identifies that the River Wey is located to the east of the site and the River Wey Navigation to the west, both of these watercourses are categorised as 'main rivers'. There is also a tributary of the River Wey to the southwest of the site. Given the presence of these watercourses, the EA's 'Flood Map for Planning' (Figure 2.3) shows the site to be located in Flood Zone 2 and 3. These maps are used as a consultation tool by planners to highlight areas where more detailed investigation into the risk of flooding is required. Consequently, the risk of flooding from this source has been examined in more detail in Section 5 of this FRA.

Flooding from the Sea – The site is located a significant distance inland and is elevated well above predicted extreme tide levels. Consequently, the risk of flooding from this source is considered to be *low*.

Flooding from Surface Water – Surface water, or overland flooding, typically occurs in natural valley bottoms as normally dry areas become covered in flowing water and in low spots where water may pond. This mechanism of flooding can occur almost anywhere but is likely to be of particular concern in any topographical low spot, or where the pathway for runoff is restricted by terrain or man-made obstructions.

The EA's 'Flood Risk from Surface Water' map (Figure 3.1) shows the development site is located in an area classified as having a 'very low' risk of surface water flooding. Additionally, there are no historical record of surface water flooding on site, therefore, the risk of flooding from this source is considered to be *low*.



Figure 3.1 – EA's 'Flood Risk from Surface Water' map (© Environment Agency).

Flooding from Sewers – In urban areas, rainwater is typically drained into surface water sewers or sewers containing both surface and wastewater known as "combined sewers". Flooding can

result when the sewer is overwhelmed by heavy rainfall, becomes blocked, or has inadequate capacity; this will continue until the water drains away.

Inspection of the asset location mapping provided by Thames Water (Figure 3.2) identifies that the sewers in this area are foul only, with the nearest sewers to the site being a foul sewer and rising foul main, located to the east of the development site. The Guildford Borough Council SFRA indicates that there has been 21 sewer flood event within this postcode area, however this is relatively course data and does not indicate any event have taken place on the proposed development site. Furthermore, aerial height data reveals that the land levels within the surrounding area fall to the northeast, therefore, if floodwater were to exit the sewer network in this area (i.e. as a result of a blockage) it would be the lower lying land to the northeast of the site where flooding would be expected. Consequently, the risk of flooding from this source is *low*.



Figure 3.2 - Asset location mapping provided by Thames Water (a full scale copy can be found in Appendix A.2)

Flooding from Groundwater – Water levels below the ground rise during wet winter months, and fall again in the summer as water flows out into rivers. In very wet winters, rising water levels may lead to the flooding of normally dry land, as well as reactivating flow in 'bournes' (streams that only flow for part of the year).

Groundwater flooding is most likely to occur in low-lying areas that are underlain by permeable rock (aquifers). The underlying geology in this area is Bagshot Formation (sand), which due to its permeable nature can be associated with groundwater flows. However, inspection of the BGS groundwater flood risk mapping data shows that the general area in which the development site lies is identified as being at low risk from groundwater flooding. In addition, mapping on groundwater emergence provided as part of the Defra Groundwater Flood Scoping Study (May 2004) shows that no groundwater flooding events were recorded during the very wet periods of 2000/01 or 2002/03 and that the site itself is not located within an area where groundwater emergence is predicted. Consequently, the risk of flooding from this source is considered to be *low*.

Flooding from Reservoirs, Canals and Other Artificial Sources – Non-natural or artificial sources of flooding can include reservoirs, canals, and lakes, where water is retained above natural ground level. In addition, operational and redundant industrial processes including mining, quarrying, and sand or gravel extraction, may also increase the depth of floodwater in areas adjacent to these features.

The potential effects of flood risk management infrastructure and other structures also needs to be considered. For example, reservoir or canal flooding may occur as a result of the facility being overwhelmed and/or as a result of dam or bank failure.

The EA's 'Flood Risk from Reservoirs' website (Figure 3.3) shows that the site is located within an area considered to be at risk of flooding from the failure of two reservoirs when there is also flooding from rivers – Frensham Great Pond and the Boldermere and Clandon Park.

However, when considering the risk of flooding from this source it is necessary to take into account the fact that these reservoirs are located a significant distance from the site and are owned and operated by the relevant water companies, who have a duty under the Reservoirs Act to ensure that they are maintained in a good working order and are inspected regularly. Consequently, due to the high standard of protection, the risk of flooding from these man-made water bodies is considered to be *low*.

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Figure 3.3 – EA's 'Risk of Flooding from Reservoirs' map (© Environment Agency).

Source of Flooding	Initial Level of Risk	Appraisal method applied at the initial flood risk assessment stage
Rivers, Ordinary and Man -Made Watercourses	Appraised further in Section 5	OS mapping and the EA's 'Flood Map for Planning'
Sea	Low	OS mapping and the EA's 'Flood Map for Planning'
Surface Water	Low	OS mapping and the EA's 'Flood Risk from Surface Water' map
Groundwater	Low	BGS groundwater flood hazard maps, Defra Groundwater Flood Scoping Study, aerial height data, OS mapping and site-specific topographic survey
Sewers	Low	Aerial height data, OS mapping, asset location data provided by Thames Water and historic sewer records contained within the SFRA
Artificial Sources	Low	OS mapping and EA's 'Flood Risk from Reservoirs' map

A summary of the overall risk of flooding from each source is provided in Table 3.1 below.

Table 3.1 – Summary of flood sources and risks.

3.3 Existing Flood Risk Management Measures

The EA's 'Spatial Flood Defence' GIS dataset identifies that there is high ground along the banks of the River Wey which provides a 1 in 5 year standard of protection.

4 Climate Change

The global climate is constantly changing, but it is widely recognised that we are now entering a period of accelerating change. Over the last few decades there have been numerous studies into the impact of potential changes in the future and there is now an increasing body of scientific evidence which supports the fact that the global climate is changing as a result of human activity. Past, present, and future emissions of greenhouse gases are expected to cause significant global climate change during this century.

The nature of climate change at a regional level will vary: for the UK, projections of future climate change indicate that more frequent short-duration, high-intensity rainfall and more frequent periods of long-duration rainfall could be expected.

These effects will tend to increase the size of Flood Zones associated with rivers, and the amount of flooding experienced from other inland sources. The rise in sea level will change the frequency of occurrence of high water levels relative to today's sea levels. It will also increase the extent of the area at risk should sea defences fail. Changes in wave heights due to increased water depths, as well as possible changes in the frequency, duration and severity of storm events are also predicted.

4.1 Planning Horizon

To ensure that any recommended mitigation measures are sustainable and effective throughout the lifetime of the development, it is necessary to base the appraisal on the extreme flood level that is commensurate with the planning horizon for the proposed development. The NPPF and supporting Planning Practice Guidance Suite state that residential development should be considered for a minimum of 100 years. development that is the subject of this FRA is classified as residential therefore a design life of 100 years has been assumed.

4.2 Potential Changes in Climate

Peak River Flow

Recognising that the impact of climate change will vary across the UK, the allowances show the anticipated changes to peak flow by management catchment. Management catchments are subcatchments of river basin districts. The proposed development site is covered by the **Thames River Basin District**, as defined by the EA 'River Basin District' maps and is located in the **Wey and tributaries Management Catchment**, as defined on the EA's 'Peak River Flow' map.

For each Management Catchment, a range of climate change allowances are provided for three different time epochs. For each epoch there are three climate change allowances defined. These represent different levels of statistical confidence in the possible emissions scenarios on which they are calculated. The three levels of allowance are as follows:

• Central: based on the 50th percentile

- Higher Central: based on the 70th percentile
- Upper End: based on the 95th percentile

The EA has provided guidance regarding the application of the climate change allowances and how they should be applied in the planning process. The range of allowance for the Management Catchment in which the development site is located are shown in Table 4.1 below.

Management Catchment Name (River Basin District)	Allowance Category	2020s	2050s	2080s
	Upper End	28%	36%	71%
Wey and tributaries (Thames)	Higher Central	15%	17%	36%
	Central	10%	9%	24%

Table 4.1 – Recommended peak river flow allowances for each epoch for the Wey and tributaries Management Catchment (1981 to 2000 baseline).

For more vulnerable development with a design life of 100 years in Flood Zone 3a, a **Central** climate change allowance is recommended. From Table 4.1 above, it can be seen that the recommended climate change allowance for this site is a **24%** increase for all peak river flows.

It is acknowledged that the River Wey Modelling and Mapping Study was completed before the latest climate change allowances were released, and therefore, the modelling does not include an event with the required 24% allowance for climate change. Notwithstanding this, the modelling does include an event with a 25% allowance for increases to peak river flows and therefore this event has been applied as the design flood event.

5 Probability and Consequence of Flooding

When appraising the risk of flooding to new development it is necessary to assess the impact of the 'design flood event'. Flood conditions can be predicted for a range of return periods, and these are expressed in either years or as a probability, i.e., the probability that the event will occur in any given year, or Annual Exceedance Probability (AEP). The design flood event is taken as the 1 in 100 year (1% AEP) event for fluvial flooding, including an appropriate allowance for climate change (refer to Section 4.2).

The EA has previously provided the modelling outputs from the River Wey Modelling and Mapping Study (2018) which has been referenced as part of this appraisal.

Flood conditions can be predicted for a range of return periods, and these are expressed in either years or as a probability, i.e., the probability that the event will occur in any given year, or Annual Exceedance Probability (AEP). A summary of the maximum predicted flood level at the site for the key return period events is provided in Table 5.1 below.

Return Period in Years (% AEP)	Modelled Flood Levels (m AODN)
1 in 30 year (3.33%)	0.00
1 in 100 year (1%)	0.00
1 in 100 year + 25% allowance for climate change (1% +25CC)	17.48

Table 5.1 – Modelled flood levels provided by the EA * a value of 0.00 indicates that the site remains dry during this event.

The 1 in 30 year Flood Event – Functional Floodplain

The functional floodplain is defined by the NPPF as land where water has to flow or be stored in times of flood during events that have a probability of occurrence of 1 in 30 (3.33%) or greater in any one year.

From Table 5.1, it can be seen that during the 1 in 30 year flood event, the site remains unaffected and is therefore not located within the functional floodplain.

The Design Flood Event

When appraising the risk of flooding to new development it is necessary to assess the impact of the 'design flood event'. The design flood event is taken as the 1 in 100 year (1% AEP) event for fluvial flooding, including an appropriate allowance for climate change (refer to Section 4.2).

This scenario has been modelled by the EA and reference to Table 5.1 above shows that the maximum flood level onsite is **17.48m AODN.** This level is recorded along the southern border of the site, away from the buildings.

When considering the location of the buildings to be converted, the maximum flood level in this area is **17.32m AODN**. Reference to the flood depth outputs from the modelling identifies that the maximum depth of flooding in the area of the buildings is 0.63m (Figure 5.1). However, the EA's mapping is based on a comparison of the flood level with aerial height data to determine the depth. When the flood level is compared to the finished floor levels of the existing building from the site-specific topographic survey, it is evident that the maximum depth of internal flooding that could occur during this extreme event is actually significantly less, varying between 0.06m and 0.26m.



Figure 5.1 - Maximum predicted extent and depth of flooding during the design flood event. (© Environment Agency - contains Ordnance Survey data © Crown copyright and database right 2023).

6 Offsite Impacts and Other Considerations

6.1 Displacement of Floodwater

The development proposals simply comprise a change of use and do not include the construction of any additional structures. As such, the proposed development will not displace any additional floodwater which could otherwise have a negative impact on the surrounding area.

6.2 Public Safety and Access

The NPPF states that safe access and escape should be available to/from new developments located within areas at risk of flooding. The Practice Guide goes on to state that access routes should enable occupants to safely access and exit their dwellings during design flood conditions and that vehicular access should be available to allow the emergency services to safely reach the development.

The risk of flooding has been appraised for a wide range of sources and it is only the risk of flooding from the River Wey and its tributaries that is shown to have any bearing on the development. At the peak of the design flood event, safe access to and from the site is unlikely to be available. As such, it is recommended that residents sign up to the EA's Flood Warning service, which could provide a forewarning to allow residents to prepare the buildings and evacuate the site, before the onset of flooding. Additionally, it is recommended that a Flood Evacuation Plan (FEP) should be prepared for the site to ensure a plan is in place to allow residents to safely evacuate the site and seek safe refuge outside the extent of flooding (refer to section 7.4).

Notwithstanding this, in the event residents are unable to evacuate the site before the onset of flooding, safe refuge will be available in the elevated loft space for the ground floor units and within the upper floor for the multi-storey units.

6.3 Proximity to Watercourse

Under the Water Resources Act 1991 and Land Drainage Byelaws, any proposals for development in close proximity to a 'main river' would need to take into account the EA's requirement for an 8m buffer zone between the river bank and any permanent construction such as buildings or car parking etc. This buffer zone increases to 16m for tidal waterbodies and sea defence infrastructure.

In this circumstance the proposed development is for the change of use of the existing building and is located over 100m from the River Wey and tributaries. As a result, the development will not compromise any of the EA's maintenance or access requirements.

7 Flood Mitigation Measures

The key objectives of flood risk mitigation are:

- to reduce the risk of the development being flooded.
- to ensure continued operation and safety during flood events.
- to ensure that the flood risk downstream of the site is not increased by increased runoff.
- to ensure that the development does not have an adverse impact on flood risk elsewhere.

The following section of this report examines ways in which the risk of flooding at the development site can be mitigated.

Mitigation Measure	Appropriate	Comment
Careful location of development within site boundaries (i.e., Sequential Approach)	x	There is limited opportunity to apply this approach as the development comprises the change of use of the existing building.
Land raising	x	_
Compensatory floodplain storage	x	It is not considered necessary or possible to
Alterations/ improvements to channels and hydraulic structures	x	development.
Flood defences	x	-
Raising floor levels	x	Refer to Section 7.1
Flood resistance & resilience	\checkmark	Refer to Section 7.2
Flood warning	~	Refer to Section 7.3
Surface water management	x	The proposed development does not include any external changes and therefore is not expected to increase the rate of discharge of surface water from the site.

Table 7.1 – Appropriateness of mitigation measures.

7.1 Raising Floor Levels

As a result of other planning and design considerations associated with the conversion of an existing building, it is not possible to raise the floor level of the existing buildings as part of this development. Therefore, flood resistance and resilience measures will be included within development with the aim of preventing flood water ingress during an extreme flood event and reducing the possible impacts in the event of internal flooding (refer to Section 7.2 below).

7.2 Flood Resistance and Resilience

Flood Resistance or 'dry proofing', where flood water is prevented from entering the building. For example, using flood barriers across doorways and airbricks, or raising floor levels. These measures are considered appropriate for 'more vulnerable' development where recovery from internal flooding is not considered to be practical.

Flood Resilience or 'wet proofing', accepts that flood water will enter the building and allows for this situation through careful internal design for example raising electrical sockets and fitting tiled floors. The finishes and services are such that the building can quickly be returned to use after the flood. Such measures are generally only considered appropriate for some 'less vulnerable' uses and where the use of an existing building is to be changed and it can be demonstrated that no other measure is practicable.

As floor levels cannot be raised above the design flood level, flood resistance and resilience measures will be incorporated into the design to prevent internal flooding where possible and manage the impact of floodwater. The applicant has confirmed that the following measures can be included within the scheme/undertaken during/before a flood event:

- Flood Doors and/or barriers will be included for openings at ground level,
- Emergency airbricks will be used where necessary,
- A loft space will be provided within the dwellings enabling residents to move belongings upstairs before the onset of flooding. This area will also provide an area of safe refuge for the ground floor only units,
- All gas and electrical maters will be raised above the flood level. In addition to electrical sockets and telephone points/other cables,
- Corrosion resistant items will be used where possible,
- Plasterboard will be orientated horizontally,
- Hydraulic lime plaster will be used where necessary,
- All cracks will be repaired,
- Damp proof membranes will be used where necessary,

- Bathrooms and kitchens will be tiled and water resistant tile grout will be used,
- Kitchen units will be raised and water resistant units will be used,
- Chipboard based baths will be avoided,
- Skirting boards will be treated,
- Any orifices in external doors will be sealed.

Details of flood resilience and flood resistance construction techniques can be found in the document '*Improving the Flood Performance of New Buildings; Flood Resilient Construction*', which can be downloaded from <u>www.gov.uk</u>.

A Code of Practice (CoP) for Property Flood Resilience (PFR) has been put in place to provide a standardised approach for the delivery and management of PFR. Further information on the CoP and guidance on how to make a property more flood resilient can be accessed, and downloaded, from the Construction Industry Research and Information Association (CIRIA) Website:

https://www.ciria.org/Resources/Free_publications/CoP_for_PFR_resource.aspx

7.3 Flood Warning

The EA operate a flood forecasting and warning service in areas at risk of flooding from rivers or the sea, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall radar data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

Whilst the probability of an event of sufficient magnitude to cause floodwaters to reach the levels discussed in this report is low, the risk of such an occurrence is always present. With the sophisticated techniques now employed by the EA to predict the onset of flood events the opportunity now exists for all residents within the flood risk area to receive early flood warnings. This forewarning could be sufficient to either allow residents to evacuate the area or prepare themselves and their property for a flood event. It is therefore recommended that the occupants of the site sign up to the EA's Flood Warning Service either by calling 0345 988 1188, or by visiting;

www.gov.uk/sign-up-for-flood-warnings

It is also suggested that a Flood Warning and Evacuation Plan (FEP) be prepared for the development and a copy of this be issued to each of the units. This document should be reviewed and updated on a regular basis, and passed on to subsequent owners/tenants of the units to ensure that future residents in years to come are aware of the flood issues.

A Flood Warning and Evacuation Plan:

- contains detailed site plans that identify emergency access routes through the site.
- provides information to residents on flood warning procedures.
- includes emergency contact numbers and other site-specific information that will enable residents to manage the impacts of flood event.

8 Conclusions and Recommendations

The aim of this report is to determine whether the proposed development at The Courtyard, Wisley Lane is sustainable in terms of flood risk and how mitigation measures can be incorporated into the building to ensure the development is safe for its lifetime.

The proposed development is for the change of use of the existing offices into residential dwellings. The NPPF states that a development of this nature does not need to be subject to the Sequential Test, nor the Exception Test. However, in accordance with The Town and Country Planning (General Permitted Development) (England) Order 2015, the change of use of a building from commercial use to residential use is subject to prior approval from the Local Planning Authority with respect to flood risk. In addition, the site is located in Flood Zone 2 and 3. Consequently, an FRA is required to appraise the risk of flooding from all key sources.

The risk of flooding has been considered across a wide range of sources and it is only the risk of fluvial flooding that has been shown to have any bearing on the development. Therefore, the following mitigation measures are recommended, in order to ensure the development is safe in terms of flood risk:

- Flood resistance and resilience measures will be incorporated into the buildings. The applicant has confirmed a number of flood resistance and resilience measures that will be included within the dwellings (Refer to Section 7.2). With these measures included the risk of internal flooding is significantly reduced.
- Residents are recommended to sign up to the EA's Flood Warning Service. This
 could provide a forewarning for conditions that could result in flooding occurring and allow
 residents to prepare their property and evacuate the site, to an area outside the extent of
 flooding.
- It is recommended that a Flood Evacuation Plan (FEP) is produced for the proposed residential units. An FEP would provide a planned evacuation procedure for the residents of the units to follow. If it is not possible to evacuate the site prior to the onset of flooding, safe refuge will be available in the loft space of single storey units and on the upper floor of the multi storey units.

In conclusion, following the recommendations of this report, the occupants of the development will be safe and the development will not increase the risk of flooding elsewhere. Consequently, it has been demonstrated that the development will meet the requirements of the NPPF.



9 Appendices

Appendix A.1 – Drawings

Appendix A.2 – Southern Water Asset Location Data



Appendix A.1 – Drawings



NOTES

Check all dimensions on site. Do not scale from this drawing. Report any discrepancies and omissions to SCd Architects. This Drawing is Copyright \bigcirc

DESIGN/SKETCH DESIGN

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2 BEDS 4 PERS 104.1sqm

> REV B MINOR ADJUSTMENTS REV A UNIT SIZES REVISED Revision

26 JAN 2023 SC 13 JAN 2023 SC

ace Standard	Bedrooms	Persons
95	3	6
70	2	4
50	1	2
39	1	1
50	1	2
61	2	3
50	1	2
50	1	2
50	1	2
70	2	4
39	1	1
39	1	1
70	2	4

The Courtyard Wisley Lane Wisley Surrey GU23 6QL

Client

Carlton Vale Investment Co Ltd

GROUND FLOOR PLAN

- PROPOSED

Drawing No.		Revision
A22.004.SK001		В
Scale @ A1	Drawn	
1:100	SC	
Date	Checked	





*





IC RSC RSJ RWF SC SKL SP TB VP WH WP	Inspection Cover Rolled Steel Colu Rolled Steel Joist Rain Water Pipe Server Cabinet Skylight Stand Pipe Soil Vent Pipe Telecoms Box Vent Pipe Water Heater Waste Pipe	imn t	B/Up→ [Box/Up→ [C/Up→ (Beam Slope Boxing Slope Ceiling Slope	s Up es Up es Up
Sy D	✓ mbolc Sin Dou ✓ Ste ✓ Ste ✓ Dia ▲ Sur	DGV gle Gate uble Gate nking up Up umeter shown	n in mm		YPES Telecom Overhead Power Overhead Foul Water Surface Water Unknown Services Change of Surface Drop Kerb Fence Wall Kerb Building Face Overhead Feature Trench Scar Tree Canopy Bushes/Foliage/Overgro Tree Canopy Extents
AL BE CE CH CON CY DE DEC ED EU FR HA HB HC NOTE 1.The have show 2.Tree	CIES ABBREVIA Alder Beech Cedar Cherry Coniferous Cypress Dead Deciduous Elder Eucalyptus Fruit Hawthorn Hornbeam Horse Chestnut S: tree species have be a not been verified by uld be verified. beights are estimate	TION HL HO HZ LA LB LM LO LU MA MG NS PI PO PL een identifie y an arboris	Hemlock Holly Hazel Larch Laburnum Lime Locust Laurel Magle Magnolia Norway Spruce Pine Poplar Plane ed to the best of the st and are not guaran	RH RO SAP SB SCN SHR ST SY WB WG WI WN surveyors k nteed. If the	Rhododendron Rowan Sapling Silver Birch Sweet Chestnut Shrub Stump Sycamore Whitebeam Wellingtonia Willow Walnut
3.A C/ 4.Tree surv 5.Mult	AD layer exists with t as with bole diameter eyed. ibole sizes are indica	the full tree rs below the	canopies intact whi a specified minimum	ch is turned I size may n	off. ot have been

Rev	Date	Notes	By
Rev	Date	Notes	Bý



RSC	Rolled Steel Column	Box/Up $ ightarrow$	Boxing Slopes Up
RSJ	Rolled Steel Joist	c/up $ ightarrow$	Ceiling Slopes Up
RWP	Rain Water Pipe		
SC	Server Cabinet		
SKL	Skylight		
SP	Stand Pipe		
SVP	Soil Vent Pipe		
ΤB	Telecoms Box		
VP	Vent Pipe		
WH	Water Heater		
WP	Waste Pipe		

Revision

Rev	Date	Notes	Ву
Rev	Date	Notes	Bý

CLIENT
Carlton Vale Investment Co Ltd
SITE The Courtyard Wisley Village GU23 6QL DRAWING TITLE
First Floor PROJECT NUMBER DRAWING NUMBER DATE SP222029 SD222029-03 Dec 2022 SUBVEYED BY DRAWIN BY CHECKED BY
ASG ASG/KL ASG/KL SCALE SHEET SIZE SHEET 1:50 AO 2 OF 2
Geospatial Consultant Surveyors
Technics Group Technics House Merrow Business Park T: 01483 230 080 Guildford E: mail@technicsgroup.com Surrey. GU4 7WA W: technicsgroup.com
Image: Second

				Datum 1
	str Flashing Gutter 19.66 UT 9.29 D 19.17 Door D 19.29 D 19.17 D 19.29 D 19.17 D 19.17	↓21.60 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	AB	B

					22.22
			STR		
9.66				19.66	
AB	AB	АВ		AB	AB
		В			
		17.53		17.70	

Elevation 2

Elevation 3

STR STR STR	22.20		
	STR	10.73	STR
B Light B Light B B B B B B B B B B B B B	19.15 B 18.13 V 16.95	V 19.73 B 19.15 B 18.13 V 16.95	9.15 B RWP ACU Cover

22.21			
		STR	
19.72	19.74		
19.15 Light B	↓ ^{19.15}		B
16.89	▼ ■ 16.93	V _	'ipe

	21.79				22.1
	STR		STR		
 		19.43			19.43
	В	_17.16	В	RWP 17.20	Б
		¥			

Notes 1. The survey grid is a local grid, coincident with Ordnance Survey National Grid at 2STN. Surveyed boundary features are not necessarily legal boundaries. Dimensions should not be scaled. All dimensions should be checked on site before any fabrication / construction. Copyright of all data produced by Technics Group shall remain with Technics Group unless otherwise specifically agreed. 5. Information provided should not be altered or modified in any way. It should not be used for any purpose other than for which it way. It should not be used for any purpose other than for which it was intended and should not be issued to other parties without prior agreement of Technics Group. 6. Technics Group cannot accept responsibility for any damage to computer systems which may result from viruses which may be contained in the data provided.7. If the AutoCAD drawing is being read by any system other than AutoCAD it should be checked against a hard copy. Technics Group cannot accept liability for omissions.8. All utilities have been identified to the best of the surveyors knowledge. The correct identification of the utility types can not be 100% guaranteed, therefore these should be independently verified prior to use in any design and building works. All pipe diameters and levels are assumed to be correct, however due to non entry to inspection chambers, these should be verified before any works commence. All drainage connections shown are sounded only. They have not been water tested. Services may be obscured by parked cars, leaf litter or building materials etc. 9. External eaves levels are surveyed to lowest tile position. Level Datum ALL LEVELS ARE ORTHOMETRIC HEIGHTS RELATED TO OSGM15 GPS DATUM, COMPUTED USING LEICA SMARTNET RTK NETWORK. Elevation Survey Key FEATURES A Alarm Box AB Air Brick ACU Air Conditioning Unit SURFACES B Brick C Cladding MC Metal Cladding Col Column DP Down Pipe Render SC Stone Cladding ECU Electrical Consumer Unit EM Electric Meter FB Fuse Box ST Stone STR Sloping Tiled Roof T Timber GM Gas Meter HR Handrail JB Junction Box TC Timber Cladding VTH Vertical Tile Hanging L Light RU Refrigeration Unit RWP Rain Water Pipe SB Switchbox SVP Soil Vent Pipe TB Telecoms Box V Vent WP Waste Pipe **Elevation Location Plan** Elevation 1 Revision Rev Date Notes Rev Date Notes _22.89 CLIENT Carlton Vale Investment Co Ltd SITE The Courtyard Wisley Village Woking, GU23 6QL DRAWING TITLE Elevations PROJECT NUMBER DRAWING NUMBER DATE SP222029 SD222029-04 Dec 2022 SURVEYED BY DRAWN BY CHECKED BY ASG/KL ASG/PP/DC/KL ASG SCALE 1:50 SHEET SIZE SHEET 1 OF 4 echnics

Technics Group Technics House Merrow Business Park T: 01483 230 080 Cuildford E: mail@technicsgroup.com

THE SURVEY ASSOCIATION

Constructionline Part of Capita plc

chartered

Notes

- The survey grid is a local grid, coincident with Ordnance Survey National Grid at 2STN.
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- Dimensions should not be scaled. All dimensions should be checked on site before any fabrication / construction.
 Copyright of all data produced by Technics Group shall remain
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- 5. Information provided should not be altered or modified in any way. It should not be used for any purpose other than for which it was intended and should not be issued to other parties without prior agreement of Technics Group.
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- computer systems which may result from viruses which may be
- computer systems which may result non-viruses which may be contained in the data provided.7. If the AutoCAD drawing is being read by any system other than AutoCAD it should be checked against a hard copy. Technics
- Group cannot accept liability for omissions.
 8. All utilities have been identified to the best of the surveyors knowledge. The correct identification of the utility types can not be 100% guaranteed, therefore these should be independently verified prior to use in any design and building works. All pipe diameters and levels are assumed to be correct, however due to non entry to inspection chambers, these should be verified before any works commence. All drainage connections shown are sounded only. They have not been water tested. Services may be obscured by parked cars, leaf litter or building materials etc.

9. External eaves levels are surveyed to lowest tile position.

Level Datum

ALL LEVELS ARE ORTHOMETRIC HEIGHTS RELATED TO OSGM15 GPS DATUM, COMPUTED USING LEICA SMARTNET RTK NETWORK.

Elevation Survey Key FEATURES A Alarm Box AB Air Brick ACU Air Conditioning Unit SURFACES B Brick C Cladding MC Metal Cladding Col Column DP Down Pipe R Render SC Stone Cladding ECU Electrical Consumer Unit EM Electric Meter FB Fuse Box ST Stone STR Sloping Tiled Roof T Timber GM Gas Meter HR Handrail JB Junction Box TC Timber Cladding VTH Vertical Tile Hanging L Light RU Refrigeration Unit RWP Rain Water Pipe SB Switchbox SVP Soil Vent Pipe TB Telecoms Box V Vent WP Waste Pipe **Elevation Location Plan** Elevation 1 Revision Rev Date Notes Rev Date Notes CLIENT Carlton Vale Investment Co Ltd SITE The Courtyard Wisley Village Woking, GU23 6QL DRAWING TITLE PROJECT NUMBER DRAWING NUMBER DATE SD222029-04 Dec 2022 SP222029 SURVEYED BY DRAWN BY CHECKED BY ASG/PP/DC/KL ASG ASG/KL SCALE 1:50 SHEET SIZE SHEET 1 OF 4 Technics

Technics Group Technics House

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Merrow Business Park T: 01483 230 080 Guildford E: mail@technicsgroup.com Surrey. GU4 7WA W: technicsgroup.com

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Appendix A.2 – Southern Water Asset Location Data

Asset location search

Herrington Consulting Limited Barham Business Park, Unit 6 Barham Business Park

CANTERBURY CT4 6DQ

National Trust 1-2 The Courtyard Wisley Woking GU23 6QL

Your reference

LS/3687

Our reference

ALS/ALS Standard/2023_4791812

Search date

27 February 2023

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at <u>www.thameswater-propertysearches.co.uk</u>

Thames Water Utilities Ltd Property Searches, PO Box 3189, Slough SL1 4WW DX 151280 Slough 13

searches@thameswater.co.uk www.thameswater-propertysearches.co.uk

0800 009 4540

Search address supplied: National Trust, 1-2 The Courtyard, Wisley, Woking, GU23 6QL

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd Property Searches PO Box 3189 Slough SL1 4WW

Email: <u>searches@thameswater.co.uk</u> Web: <u>www.thameswater-propertysearches.co.uk</u>

Asset location search

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd Tamblin Way Hatfield AL10 9EZ Tel: 0345 3572401

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4WW, DX 151280 Slough 13 T 0800 009 4540 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water) Thames Water Clearwater Court Vastern Road Reading RG1 8DB

Tel: 0800 009 3921 Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water) Thames Water Clearwater Court Vastern Road Reading RG1 8DB

Tel: 0800 009 3921 Email: developer.services@thameswater.co.uk

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale:	1:1791	Comments:
Width:	500m	
Printed By:	Skrishna1	
Print Date:	27/02/2023	
Map Centre:	505733,159623	
Grid Reference:	TQ0559NE	

ALS/ALS Standard/2023_4791812

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
4801	16.91	
6801	16.6	
7701	16.66	

REFERENCE	COVER LEVEL	INVERT LEVEL
5801	16.56	
8801	15.79	
8701	17.09	12.77

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Asset Location Search - Sewer Key

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

- 1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
- 2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
- 3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
- 4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
- 5. In case of dispute TWUL's terms and conditions shall apply.
- 6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
- 7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
- 8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0800 009 4540 quoting your invoice number starting CBA or ADS / OSS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater. co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number	Made payable to ' Thames Water Utilities Ltd' Write your Thames Water account number on the back. Send to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW or by DX to 151280 Slough 13

Ways to pay your bill

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.