



Dorset Innovation Park LDO Flood Risk Assessment

For Purbeck District Council

Date: 13 November 2018

BIM Ref: DIP-HYD-XX-XX-RP-D-5001

DOCUMENT CONTROL SHEET

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P02	S2	04/07/2018	Final report
P03	S2	01/08/2018	Final report (issued for LDO submission)
P04	S2	13/11/2018	Final report (NPPF reference and appended technical note)

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1. INTRODUCTION

This Flood Risk Assessment (FRA) report has been prepared by Hydrock on behalf of Purbeck District Council in support of a local development order (LDO) to be submitted to Purbeck District Council for a proposed development at the Dorset Innovation Park. The Assessment will inform the drafting of the parameters, conditions and Design Guidance which, when read together, will ensure that appropriate development proposals are brought forward for consideration under applications for prior approval

Parts of the site are within Flood Zones 2 (Medium Risk) and Flood Zone 3 (High Risk). This FRA report has been prepared to address the requirements of the National Planning Policy Framework (NPPF), through:

- Assessing whether the site is likely to be affected by flooding.
- Assessing whether the proposed development is appropriate in the suggested location.
- Presenting any flood risk mitigation measures necessary to ensure that the proposed development and occupants will be safe, whilst ensuring flood risk is not increased elsewhere.

2. SITE INFORMATION

2.1 Location

The site is situated west of Wool, Dorset, roughly bounded by the Christchurch to Dorchester railway line to the north, other industrial buildings and minor access roads before Gatemoor Road to the west and the River Win to the southeast. The site location is shown in Figure 1, with full address and Ordnance Survey Grid Reference in Table 1.

Site Referencing Information	
Site Address	Dorset Green Technology Park Winfrith Newburgh, Wool, Dorchester DT2 8ZB
Grid Reference	SY819869 381973, 86907

Table 1: Site Referencing Information

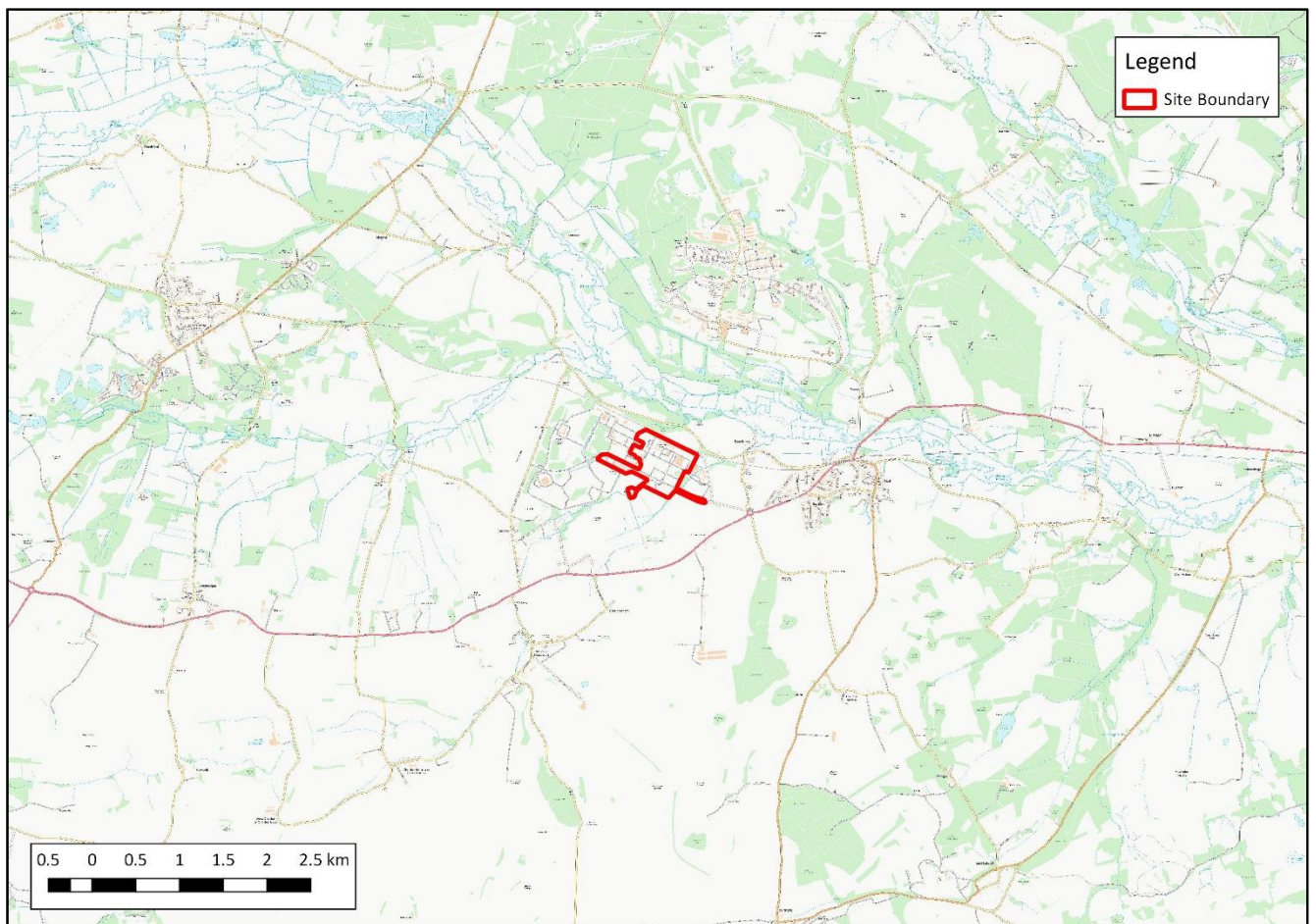


Figure 1: Site Location

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2.2 Topography

Ground levels on site fall from approximately 26m AOD in the west to approximately 20m AOD in the east. A detailed topographical survey is included in Appendix A.

2.3 Existing Site

The site is currently partially developed with industrial buildings interspaced with areas of landscaping (i.e. grass and trees) and minor access roads. The existing site layout is shown in Appendix C and on the topographical survey in Appendix A.

2.4 Proposed Development

The proposed development is for the demolition of some of the existing buildings and construction of a number of new buildings. A draft layout proposal is included in Appendix C.

3. SOURCES OF FLOOD RISK

This section summarises the potential flood risk to the site from various potential sources. A summary of the flood risk from these sources is given in Table 2.

Summary of Potential Sources of Flood Risk	
Fluvial	Majority Low, some Medium and High from River Win
Tidal	Negligible
Surface Water	Low
Groundwater	Low
Sewer	Low
Infrastructure Failure	Low

Table 2: Summary of Potential Sources of Flood Risk

3.1 Fluvial Flooding

The River Win flows in a northeasterly direction along the eastern site boundary, and through the site below Monterey Avenue. This watercourse is designated a 'Main River' so the Environment Agency are responsible for the management of fluvial flood risk along the watercourse. Environment Agency mapping (Figure 2) shows that while there are areas of the wider site in Flood Zone 2 (Medium Risk) and in Flood Zone 3 (High Risk) around Chapman House and Monterey Avenue, the majority of the site is within Flood Zone 1 (Low Risk). These Fluvial Flood Zones are defined as follows (with relevance of Flood Zones 3a and 3b addressed in Section 5.1):

- Flood Zone 1 (Low Risk) comprises land assessed as having a $\leq 0.1\%$ AEP of fluvial flooding in any given year, equivalent to the 1 in $\geq 1,000$ year return period event.
- Flood Zone 2 (Medium Risk) comprises land assessed as having a 0.1-1% AEP of fluvial flooding in any given year, equivalent to the 1 in 1,000-100 year return period event.
- Flood Zone 3 (High Risk) comprises land assessed as having a $\geq 1\%$ AEP of fluvial flooding in any given year, equivalent to the 1 in ≤ 100 year return period event.
 - » Flood Zone 3a (High Risk) comprises land assessed as having a 1-5% AEP of fluvial flooding in any given year, equivalent to the 1 in 100-20 year return period event.
 - » Flood Zone 3b (Functional Floodplain) comprises land assessed as having a $\geq 5\%$ AEP of fluvial flooding in any given year, equivalent to the 1 in ≤ 20 year return period event.

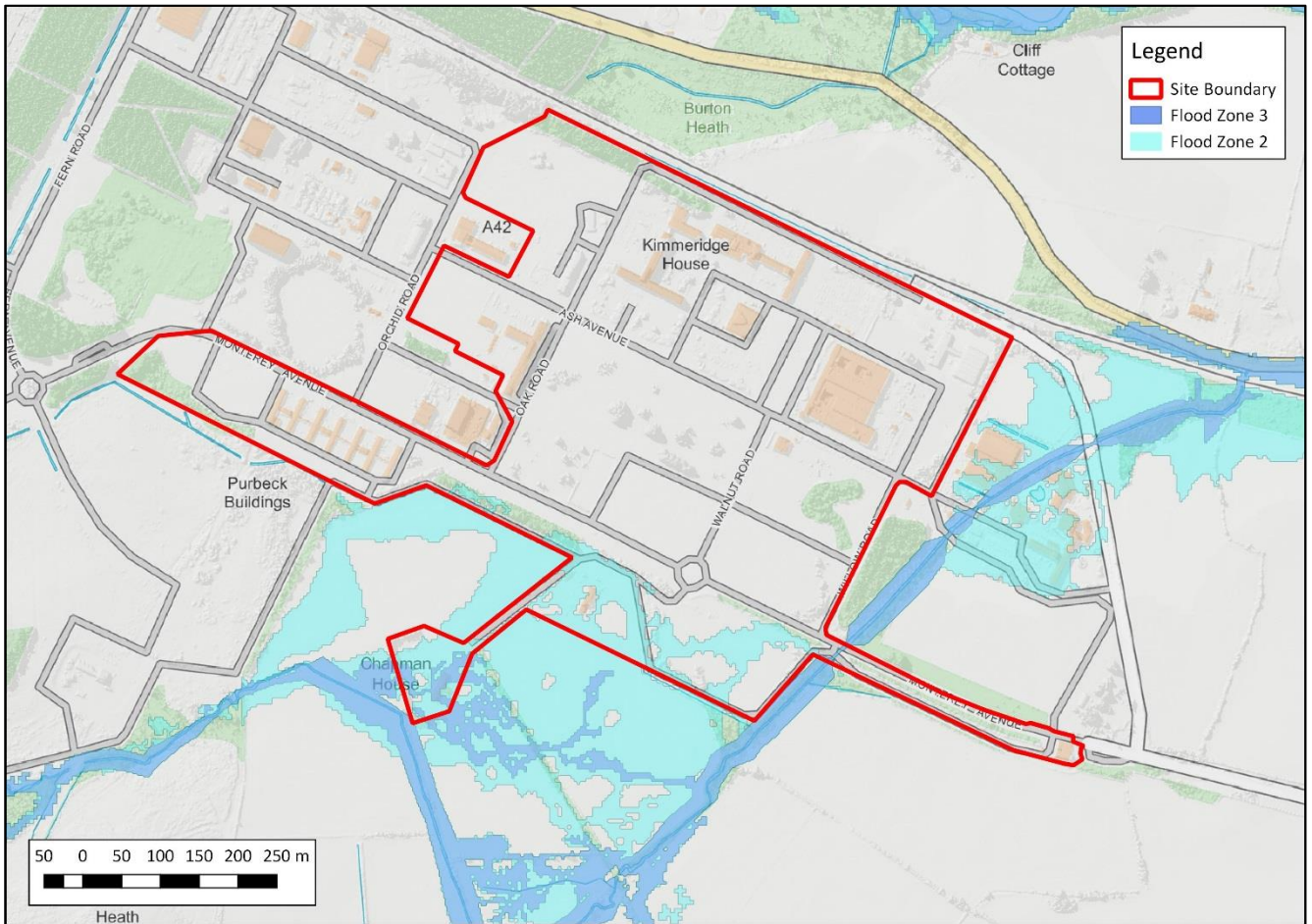


Figure 2. Environment Agency Fluvial Flood Map

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3.2 Tidal Flooding

Given the site’s significant elevation above sea level (>20m AOD) and geographical location upstream of tidal reaches of the River Frome into which the River Win flows, the site is concluded to be at negligible risk of tidal flooding.

3.3 Surface Water Flooding

Surface water flooding occurs as the result of an inability of intense rainfall to infiltrate to ground. This often happens when the maximum soil infiltration rate or storage capacity is reached. Such flows either drain into existing land drainage features or follow the general topography which can concentrate flows and lead to localised ponding/flooding.

Environment Agency surface water flood mapping (Figure 3) shows the majority of the site to be at a ‘very low’ risk of flooding from this source though there are isolated areas of ‘low’, ‘medium’ and ‘high’ risk across the site. The mapping does not take account of existing drainage infrastructure nor differentiate risk along lower lying channels (which by definition is fluvial) and on this basis the overall risk of surface water flooding is considered to be low.

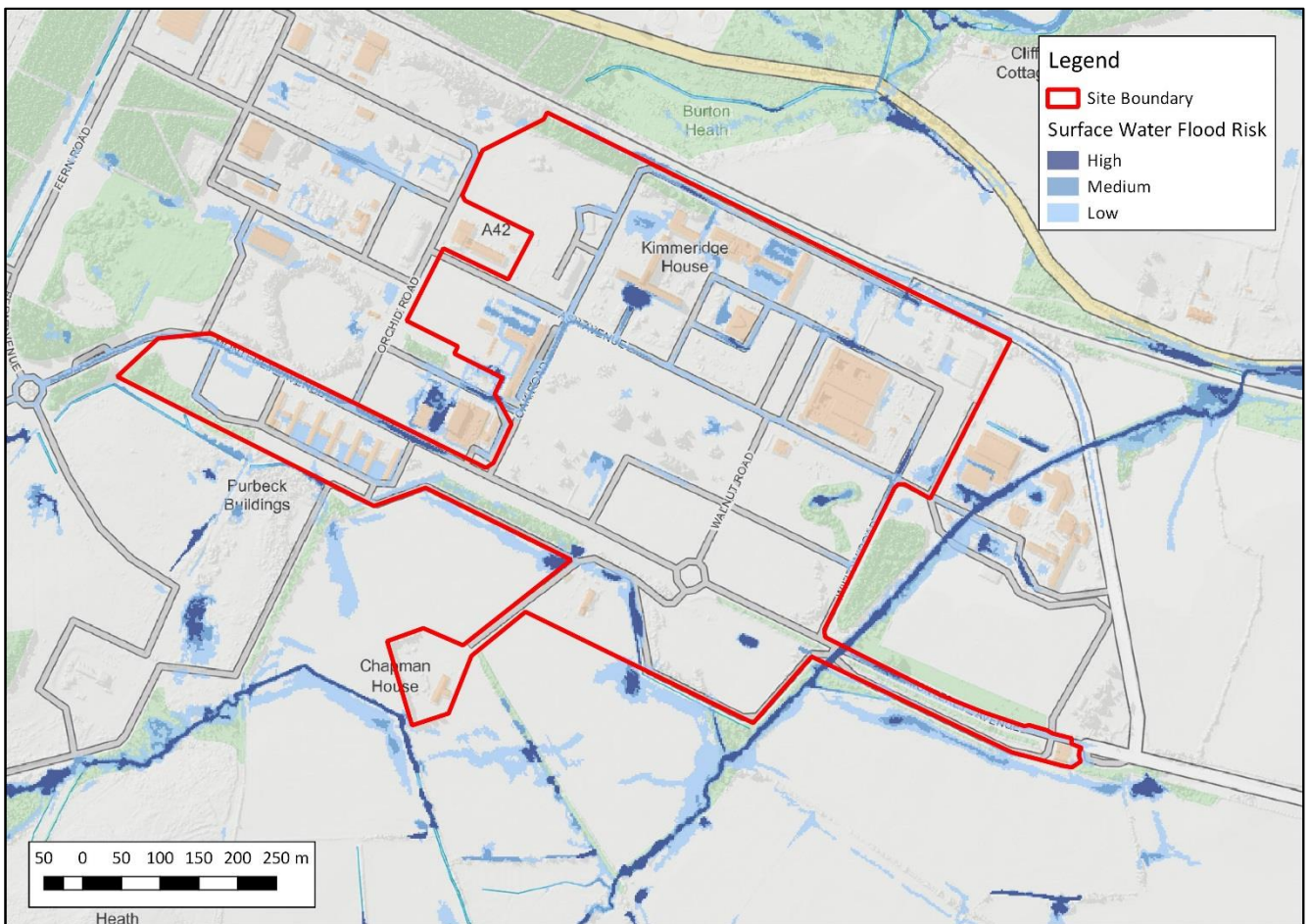


Figure 3. Environment Agency Surface Water Flooding Map

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3.4 Groundwater Flooding

British Geological Survey (BGS) bedrock mapping shows the southeast of the site is underlain by West Park Member Sand with the northwest underlain by Pool Formation Sand. It is likely that following heavy rainfall, groundwater flows through this permeable geology are likely and groundwater depths in areas adjacent to the River Win are likely to be comparable to water levels in the channel. As there is a lack of steep slopes across the site, actual emergence onto the site is unlikely, and so the overall risk of flooding from this source is considered to be low.

3.5 Sewer Flooding

The Strategic Flood Risk Assessment (SFRA) (PDC, 2015, p6) states that surface water sewers are designed to 'a standard of around 1 in 20 to 30 years'. There is no specific risk of sewer flooding in or around the Dorset Innovation Park, and on this basis, the overall risk of sewer flooding at the site is considered to be low.

3.6 Infrastructure Failure Flooding

The site is not shown in the Environment Agency mapping to be at risk of flooding from reservoirs. There is also no known risk of flooding from canals or any other artificial source and so the site is concluded to be at low risk of flooding from infrastructure failure.

4. HISTORIC FLOODING

SFRA mapping (PDC, 2011, Map 3, included in Appendix D of this report) shows reported flooding incidents where the River Win passes below the railway line east of the site. Environment Agency records (Figure 4) show flooding along the River Frome north of the site in 1959. The records however show the site was not affected by this event.

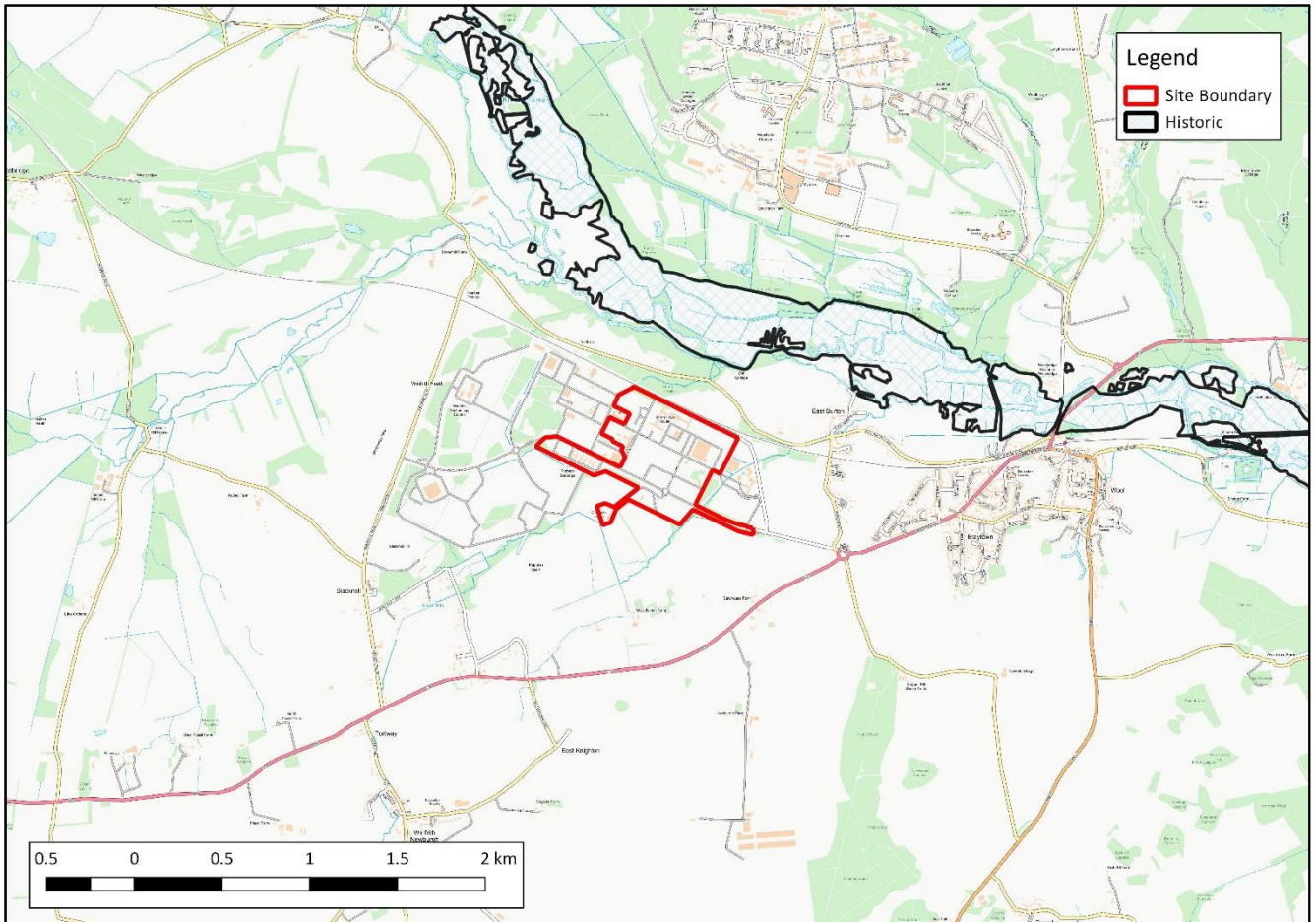


Figure 4. Environment Agency Historic Flooding Map

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5. NATIONAL PLANNING POLICY FRAMEWORK

5.1 Sequential Test

The National Planning Policy Framework (NPPF) Sequential Test requires that a sequential approach is followed to steer new development to areas with the lowest probability of flooding (i.e. Flood Zone 1, then 2, then 3).

An assessment has been made of the proposed development option's flood risk vulnerability (GOV.UK (B), Point 25, Table 2) and suitability of each within the Flood Zone in which it is proposed (GOV.UK (B), Point 25, Table 3). The proposed commercial development is considered 'less vulnerable' with respect to flood risk. Less vulnerable development is considered acceptable within the Flood Zone 1 (Low Risk) and Flood Zone 2 (Medium Risk) parts of the site in which they are proposed, and on this basis the proposals are demonstrated as being in accordance with the principles of the Sequential Test.

The site's allocation within the Purbeck District Council Adopted Local Plan is detailed further in the appended technical note (Appendix E).

5.2 Exception Test

A NPPF Exception Test (GOV.UK (B), Point 7) requires that a proposed development provides wider sustainability benefits to the community that outweigh flood risk, and that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall.

An Exception Test is not explicitly required as the proposals are in accordance with the principles of the Sequential Test. Further consideration has however been made to ensure the Exception Test conditions are met as far as practicable.

5.2.1 Flood Resistance

Details on recommended minimum Finished Floor Levels (FFLs) are included in the appended technical note (Appendix E).

6. ENVIRONMENT AGENCY RIPARIAN RESPONSIBILITIES AND PERMITS

It should be noted that:

- Riparian ownership responsibilities as outlined in the 'Owning a Watercourse' online guidance (EA, 2018) apply as the River Win flows along the edge and through the site.
- Any works within 8m of the River Win may be subject to an Environmental Permit for Flood Risk Activities (EA, 2016).

7. DRAINAGE

A drainage strategy has been undertaken by Hydrock and is included in a separate report (ref. DIP-HYD-ZZ-XX-RP-D-001).

8. SUMMARY

This Flood Risk Assessment (FRA) report has been prepared by Hydrock on behalf of Purbeck District Council in support of a local development order (LDO) to be submitted to Purbeck District Council for a proposed development at the Dorset Innovation Park. The Assessment will inform the drafting of the parameters, conditions and Design Guidance which, when read together, will ensure that appropriate development proposals are brought forward for consideration under applications for prior approval. The main findings are as follows:

- The site is currently partially developed with industrial buildings interspaced with areas of landscaping (i.e. grass and trees) and minor access roads.
- The proposed development is for the demolition of some existing buildings, and construction of new buildings.
- Environment Agency mapping (Figure 2) shows that while there are areas of the wider site in Flood Zone 2 (Medium Risk) and in Flood Zone 3 (High Risk) around Chapman House and Monterey Avenue, the majority of the site is within Flood Zone 1 (Low Risk). There is also concluded to be a low risk of flooding from all other sources.
- There are no records of historic flooding at the site.
- The proposed commercial development is considered 'less vulnerable' with respect to flood risk. Less vulnerable development is considered acceptable within the Flood Zone 1 (Low Risk) and Flood Zone 2 (Medium Risk) parts of the site in which they are proposed and on this basis the proposals are demonstrated as being in accordance with the principles of the Sequential Test.
- An appended technical note includes details on the site's allocation within the Purbeck District Council Adopted Local Plan and on recommended minimum Finished Floor Levels (FFLs).
- Riparian ownership responsibilities as outlined in the 'Owning a Watercourse' online guidance (EA, 2018) apply as the River Win flows along the edge and through the site.
- Any works within 8m of the River Win may be subject to an Environmental Permit for Flood Risk Activities (EA, 2016).
- A drainage strategy has been undertaken by Hydrock and is included in a separate report (ref. DIP-HYD-ZZ-XX-RP-D-001).

The LDO is therefore concluded to meet the flood risk requirements of the NPPF.

9. REFERENCES

Summary of Potential Sources of Flood Risk		
Author	Date	Description
Construction Industry Research and Information Association (CIRIA)	Nov 2015	C753 The SuDS Manual
Environment Agency (EA)	Feb 2018	Owning a Watercourse (https://www.gov.uk/guidance/owning-a-watercourse)
Environment Agency (EA)	Nov 2016	Flood Risk Activities: environmental permits (https://www.gov.uk/guidance/flood-risk-activities-environmental-permits)
GOV.UK	(A) Updated July 2018	National Planning Policy Framework (NPPF), 10. Meeting the challenge of climate change, flooding and coastal change (https://www.gov.uk/government/publications/national-planning-policy-framework--2)
GOV.UK	(B) Released 15/04/15, now evolving online guidelines	Planning Practice Guidance, Flood Risk and Coastal Change (http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/)
GOV.UK	(C) Released 19/02/16	Environment Agency, Flood Risk Assessments: Climate Change Allowances (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances)
Hydrock Consultants	Aug 2018	Dorset Innovation Park Drainage Strategy
Purbeck District Council (PDC)	Sep 2011	Strategic Flood Risk Assessment v8
Purbeck District Council (PDC)	Jan 2015	Purbeck Local Plan Partial Review Strategic Flood Risk Assessment
Purbeck District Council (PDC)	Jan 2018	Purbeck Local Plan Partial Review Strategic Flood Risk Assessment

Appendix A

Topographical Survey

Reference	Title
V14391_SX	Topographical Survey A1 (1 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (2 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (3 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (4 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (5 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (6 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (7 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015
V14391_SX	Topographical Survey A1 (8 of 14) by Lewis Brown Chartered Land Surveyors dated 02.2015



LEVEL INFORMATION
 Heights in Metres
 Datum Derived From: GPS Derived
 OSBM Location: ST99
 Value: 20.907m
 Active Station Locations:
 Conversions Used: OSTN02;OSGM02;

COORDINATE INFORMATION
 Values in Metres
 All Coordinates are: TRUE NATIONAL GRID
 Scale Factor: 0.99959413166

SURVEY STATION SCHEDULE

STN	TYPE	EASTINGS	NORTHINGS	LEVEL
ST01	ST	382427.924	86721.337	22.463
ST02	ST	382384.038	86780.816	21.713
ST03	ST	382338.208	86802.010	21.976
ST04	ST	382300.468	86827.029	22.161
ST05	ST	382273.853	86866.154	22.584
ST06	ST	382339.744	86868.804	22.186
ST07	ST	382393.398	86859.275	21.810
ST08	ST	382414.840	86716.843	21.517
ST09	ST	382124.992	86910.877	22.741
ST10	ST	381979.075	86937.065	23.758
ST11	ST	382041.515	86656.478	23.822
ST12	ST	382151.685	86488.309	22.816
ST13	ST	382184.865	86580.328	23.418
ST14	ST	381967.392	86730.261	23.268
ST15	ST	382070.844	86879.325	23.814
ST16	ST	382117.606	86654.826	23.607
ST17	ST	382121.501	86631.182	23.135
ST18	ST	382347.864	86563.731	23.269
ST19	ST	382495.508	86735.715	20.907
ST20	ST	382043.909	86628.950	23.826
ST21	ST	382709.842	86602.129	23.449
ST22	ST	382286.866	86493.992	22.714
STNA	ST	382593.844	86680.882	21.694
STNB	ST	382483.072	86786.243	21.068
STNC	ST	382444.631	86786.422	21.214

ABBREVIATIONS

General	IC
(A) Approximate	IC Inspection Cover
AF Angle Iron Fence	IL Invert Level
(AR) Assumed Route	IR Iron Rail Fence
AW Assumed Wall	IRF Inter Woven Fence
BB Bollard	KO Kerb Outlet
BN Ben	LFC Ladder
Bld Building	LP Lamp Post
BW Brick Wall	LU Lint
BS Bush	MHR Metal Hand Rail
BT British Telecom Inspection Chamber	MP Metal Post
BU Brick Wall	MPS Metal Post & Rail Fence
BWF Barbed Wire Fence	N/A Not Applicable
CB Cabinet	OSM Ordnance Survey Bench Mark
CBF Close Boarded Fence	O/U Overhead
CBR Crash Barrier	OT Outline
CC Concrete	OSM Ordnance Survey
CDC Concrete Drainage Channel	PAF Pollard Fence
CE Concrete Edging	PAI Pavement
CEC Concrete Edging	PI Pipe into Ground
CI Cable into Ground	PL Pavement Light
CCF Corrugated Iron Fence	RD Record
CL Cover Level	RS Road Sign
CR Chain Link Fence	RE Road Edge
CM Cable Marker	RSI Rolled Steel Joist
CO Column	RW Retaining Wall
CONC Concrete	SD Shed
CP Concrete Post	SE Stone Edging
CPS Concrete Paving Slabs	SEC Security Fence
CT Cable TV Inspection Chamber	Sho Shrub
CV Concrete Wall	SV Soil Level
D Brick Wall	SW Spotlight
DW Drip Wall	SN Sign
DI Disipitated	SVN Sign Valve
DK Drop Kerb	SW Stop Valve
DP Rainwater Down Pipe	SWMK Stop Valve Marker
DW Dry Stone Wall	SW Dry Stone Wall
Ea Earth	SW Storm Water Inspection Chamber
EIC Electricity Inspection Chamber	SY Slop
EM Electric Meter	SYM Slop
EP Electricity Pole	TL Threshold Level
ER Earth Rod	TL Traffic Light
ETL Electricity Transmission Lines	TL Traffic Light
F Fence	TMC Traffic Management IC
FH Fire Hydrant	TP Telegraph Pole
FMK Fire Hydrant Marker	TPS Tactile Paving Slabs
FL Floor Level	TTL Telephone Transmission Line
FB Flowerbed	U/G Underground
FV Floodlight	ULI Unable To Lift
FP Footpath	VEG Vegetation
FWC Foul Water Inspection Chamber	VP Vent Pipe
GM Gas Meter	W Well
GMK Gas Marker	WE Wood Edging
GP Gate Post	WL Water Level
Gr Grass	WM Water Meter
GV Gas Valve	WV Wire Mesh Fence
GW Gully	WMK Water Meter Marker
H Height	WO Wash Out
Hc Hardcore	WP Wooden Post
IB Illuminated Bollard	WPR Wooden Post & Rail Fence

Station Abbreviations
 HN Hill Nail PKN Parker Kation Nail
 PM Permanent Ground Marker WP Wooden Peg

NOTES
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 Any underground services shown on this survey are from information on service enquiries and tracing with Electrolocation equipment.
 Some underground services may be undetectable, e.g. non-conductive pipes or cables and therefore NOT SHOWN.
 CONTOURS
 Any contours depicted on this drawing have been interpolated from surveyed points, levels and features.
 The contour line positions have been generated by ground modelling software and are INDICATIVE only.

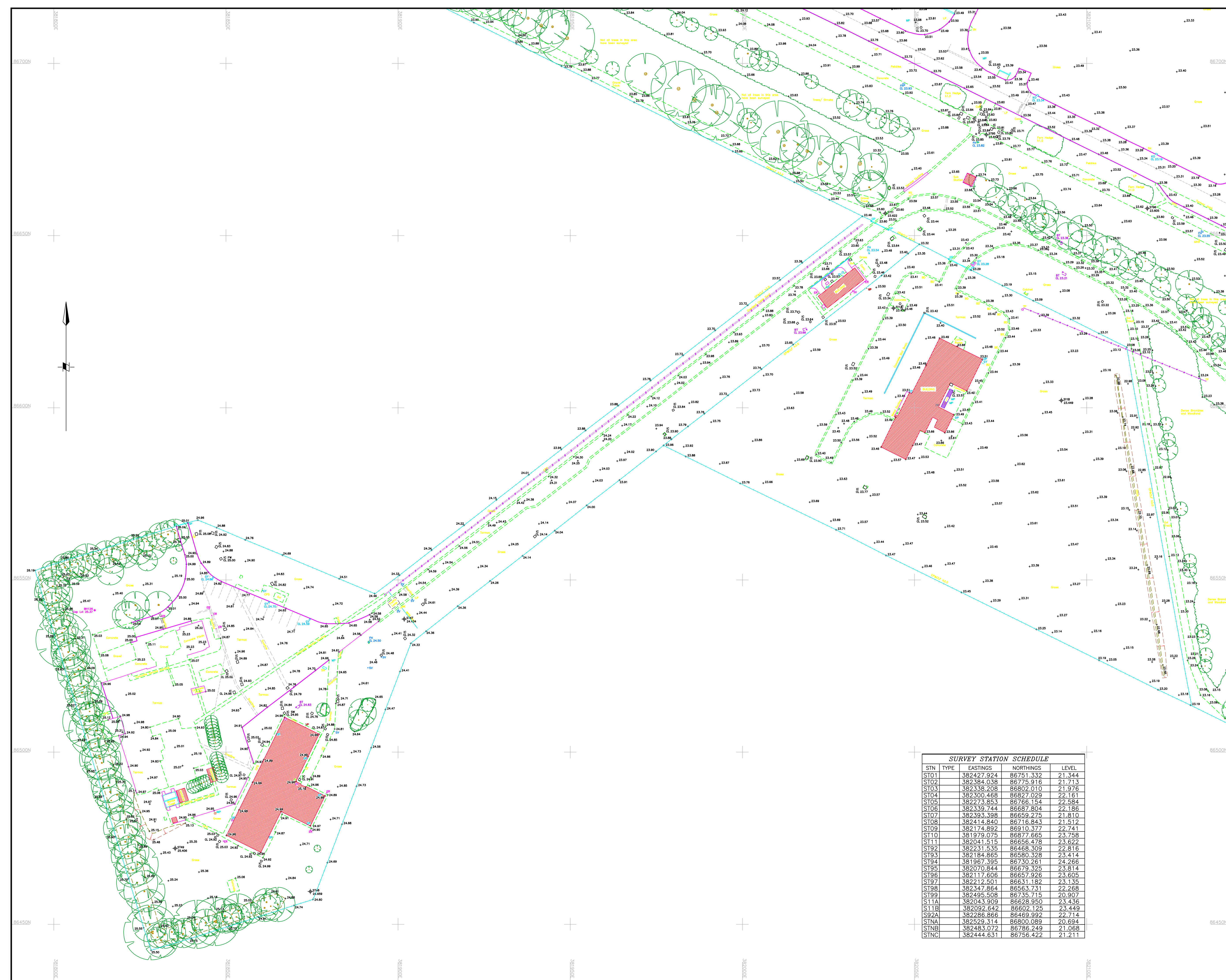
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TITLE:
 TECHNOLOGY CENTRE
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 DORSET
 TOPOGRAPHICAL SURVEY

Drawing Number: V14391_SX	Revision:
Scale: 1:500	Sheet: A1 1of14
Drawn: RDJB/KB	Survey Date: 02.2015
Checked: DIL	Project Number: V14391



LEVEL INFORMATION				
Heights in Metres				
Datum Derived From: GPS Derived				
OSBM Location: ST99				
Value: 20.907m				
Active Station Locations:				
Conversions Used: OSTN02;OSGM02;				
COORDINATE INFORMATION				
Values in Metres				
All Coordinates are: TRUE NATIONAL GRID				
Scale Factor: 0.99959413166				
SURVEY STATION SCHEDULE				
STN	TYPE	EASTINGS	NORTHINGS	LEVEL
ABBREVIATIONS				
General				
(A) Approximate	IC Inspection Cover			
AF Angle Iron Fence	L Invert Level			
AR Assumed Route	RF Iron Rail Fence			
Avg Average	RF Iron Rail Fence			
BB Bollard	RD Road			
BL Boller	RO Road			
Bld Building	RP Road			
BW Brick Wall	RP Road			
BS Bush	RS Road Sign			
BT British Telecom Inspection Chamber	RS Road Sign			
CB Cabinet	RS Road Sign			
CW Crash Barrier	RS Road Sign			
CDB Close Boarded Fence	RS Road Sign			
CDC Concrete Drainage Channel	RS Road Sign			
CE Concrete Edging	RS Road Sign			
CH Chestnut Paving	RS Road Sign			
CI Cable Into Ground	RS Road Sign			
CP Concrete	RS Road Sign			
CL Chain Link Fence	RS Road Sign			
CM Concrete Marker	RS Road Sign			
Col Column	RS Road Sign			
Conc Concrete	RS Road Sign			
CP Concrete Post	RS Road Sign			
CPS Concrete Paving Slab	RS Road Sign			
CT Cable TV Inspection Chamber	RS Road Sign			
DW Concrete Wall	RS Road Sign			
DP Drop Kerb	RS Road Sign			
DM Diagonal	RS Road Sign			
DK Drop Kerb	RS Road Sign			
DP Rainwater Down Pipe	RS Road Sign			
DSW Dry Stone Wall	RS Road Sign			
EA Earth	RS Road Sign			
EL Electricity Inspection Chamber	RS Road Sign			
EM Electricity Meter	RS Road Sign			
EP Electricity Pole	RS Road Sign			
ER Earth Rod	RS Road Sign			
ETL Electricity Transmission Lines	RS Road Sign			
F Fence	RS Road Sign			
FH Fire Hydrant	RS Road Sign			
FHMK Fire Hydrant Marker	RS Road Sign			
FL Floor Level	RS Road Sign			
FV Flowerbed	RS Road Sign			
FP Floodlight	RS Road Sign			
FP Footpath	RS Road Sign			
FWC Foul Water Inspection Chamber	RS Road Sign			
GM Gas Meter	RS Road Sign			
GMK Gas Marker	RS Road Sign			
GP Gate Post	RS Road Sign			
Gr Grass	RS Road Sign			
GV Gas Valve	RS Road Sign			
GW Gravel	RS Road Sign			
Gy Gully	RS Road Sign			
H Height	RS Road Sign			
Hc Hardcore	RS Road Sign			
IB Illuminated Bollard	RS Road Sign			
HN Hill Nail	RS Road Sign			
PGM Permanent Ground Marker	RS Road Sign			
PKN Parker Kilton Nail	RS Road Sign			
WP Wooden Peg	RS Road Sign			
NOTES				
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Rev.	Date	Amendments

SURVEY STATION SCHEDULE				
STN	TYPE	EASTINGS	NORTHINGS	LEVEL
ST01		382427.924	86751.332	21.344
ST02		382384.038	86775.916	21.713
ST03		382338.208	86802.010	21.976
ST04		382300.468	86827.029	22.161
ST05		382273.853	86766.154	22.584
ST06		382339.744	86687.804	22.186
ST07		382393.398	86659.275	21.810
ST08		382414.840	86716.843	21.512
ST09		382174.892	86910.377	22.741
ST10		381979.075	86877.665	23.758
ST11		382041.515	86656.478	23.622
ST12		382231.535	86468.309	22.816
ST13		382184.865	86580.328	23.414
ST14		381967.395	86730.261	24.266
ST15		382070.844	86679.325	23.814
ST16		382117.606	86657.926	23.805
ST17		382212.501	86631.182	23.135
ST18		382347.864	86563.731	22.268
ST19		382495.508	86735.715	20.907
ST20		382043.909	86628.950	23.436
ST21		382092.642	86602.125	23.449
ST22		382286.866	86469.992	22.714
STNA		38259.314	86800.089	20.694
STNB		382483.072	86786.249	21.068
STNC		382444.631	86756.422	21.211

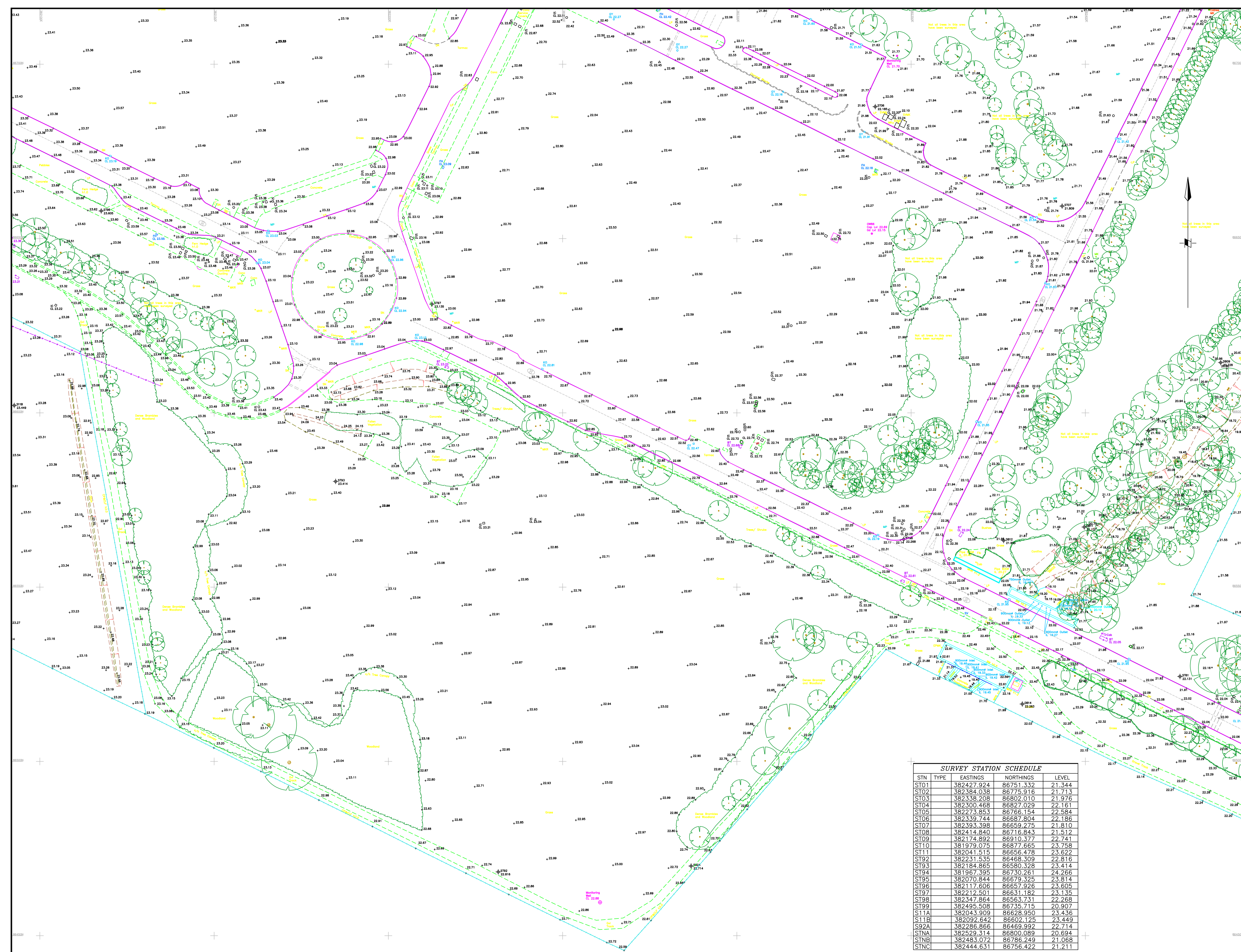
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 Lewis Brown Limited Registered in England No. 4193534

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TITLE:
 TECHNOLOGY CENTRE
 DORSET GREEN
 WINFRITH
 DORSET
 TOPOGRAPHICAL SURVEY

Drawing Number: V14391_SX	Revision:
Scale: 1:500	Sheet: A1 3of14
Drawn: RDJB/KB	Checked: DIL
Survey Date: 02.2015	Project Number: V14391



LEVEL INFORMATION

Heights in Metres
Datum Derived From: GPS Derived
OSBM Location: ST99
Value: 20.907m
Active Station Locations:
Conversions Used: OSTN02;OSGM02;

COORDINATE INFORMATION

Values in Metres
All Coordinates are: TRUE NATIONAL GRID
Scale Factor: 0.99959413166

SURVEY STATION SCHEDULE

STN	TYPE	EASTINGS	NORTHINGS	LEVEL

ABBREVIATIONS

General	IC
(A) Approximate	IC Inspection Cover
(A) Assumed Route	IL Invert Level
AW Average	IRF Iron Rail Fence
B Bollard	IRF Inter Women Fence
BL Litter Bin	KO Kerb Outlet
BD Building	L Ladder
BW Block Wall	LP Lump Post
BS Bush	MR Manhole
BT British Telecom Inspection Chamber	MHR Metal Hand Rail
BTM Brick Wall	MP Marker
BWF Barbed Wire Fence	MPF Metal Post & Rail Fence
CB Close Boarded Fence	O/O Overhead
CBF Close Boarded Fence	O/O Outline
CDC Concrete Drainage Channel	OSM Ordnance Survey Bench Mark
CE Concrete Edging	PAF Pollard Fence
CH Chestnut Paving	Pav Pavings
CI Cable Into Ground	PI Pipe Into Ground
CC Concreted Iron Fence	PL Pavement Light
CL Chain Link Fence	RC Records
CM Cable Marker	RE Rodding Eye
CL Concrete	RSL Road Sign
CP Concrete Post	RSI Robbed Steel Joist
CPC Concrete Paving Slabs	RW Retaining Wall
CT Cable TV Inspection Chamber	SD Sid Drain
CP Concrete Wall	SE Stone Edging
DW Drain	Sec Security Fence
DM Drain	Sh Shrub
DN Dilapidated	SL Soft Level
DP Down Pipe	Spotlight
DR Dry Stone Wall	SV Stop Valve
EA Earth	SWM Storm Water Inspection Chamber
EP Electric Meter	SWM Stop Valve Marker
EP Electric Pole	SF Slurry
ER Earth Road	TL Torc
ETL Electricity Transmission Lines	THL Threshold Level
F Fence	TL Traffic Light
FH Fire Hydrant	TLC Traffic Light Control
FMK Fire Hydrant Marker	TMC Traffic Management IC
FLL Floor Level	TP Telephone Transmission Line
FIB Fibre	U/A Underpinned
Fl Flowerbed	UL Under LIFT
FP Footpath	UN Unable To Lift
FWF Foul Water Inspection Chamber	VE Vegetation
GA Gas Meter	VP Vent Pipe
GM Gas Meter	W Well
GR Grass	WE Wood Edging
GV Gas Valve	WL Water Level
GVI Gravel	WM Water Meter
GY Gully	WMM Wire Mesh Fence
H Height	WMK Water Meter Marker
Hc Horizontal	W Wash Out
Hl Illuminated Ballast	WP Wooden Post
IB Illuminated Ballast	WPR Wooden Post & Rail Fence

NOTES

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SCALE
Information has been gathered for the quoted scale.
Any enlargement should be verified on site.

DRAINAGE
Pipe sizes and connections are determined from surface level inspection and service records where available.

UNDERGROUND SERVICES
Any underground services shown on this survey are from information on service enquiries and tracing with Electrolocation equipment.
Some underground services may be undetectable, e.g. non-conductive pipes or cables and therefore NOT SHOWN.

CONTOURS
Any contours depicted on this drawing have been interpolated from surveyed points, levels and features.
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SURVEY STATION SCHEDULE

STN	TYPE	EASTINGS	NORTHINGS	LEVEL
ST01		382427.924	86751.332	21.344
ST02		382384.038	86775.916	21.713
ST03		382338.208	86802.010	21.976
ST04		382300.468	86827.029	22.161
ST05		382273.853	86766.154	22.584
ST06		382339.744	86687.804	22.186
ST07		382393.398	86659.275	21.810
ST08		382414.840	86716.843	21.512
ST09		382174.892	86910.377	22.741
ST10		381979.075	86877.665	23.758
ST11		382041.515	86656.478	23.622
ST12		382231.535	86468.309	22.816
ST13		382184.965	86580.328	23.414
ST14		381987.395	86730.261	24.266
ST15		382070.844	86679.325	23.814
ST16		382117.606	86657.926	23.605
ST17		382212.501	86631.182	23.135
ST18		382347.864	86663.731	22.268
ST19		382495.508	86735.715	20.907
ST20		382043.909	86628.950	23.436
ST21		382092.642	86602.125	23.449
ST22		382286.866	86469.992	22.714
ST23		382529.314	86800.089	20.694
ST24		382483.072	86786.249	21.068
ST25		382444.631	86756.422	21.211

Rev.	Date	Amendments

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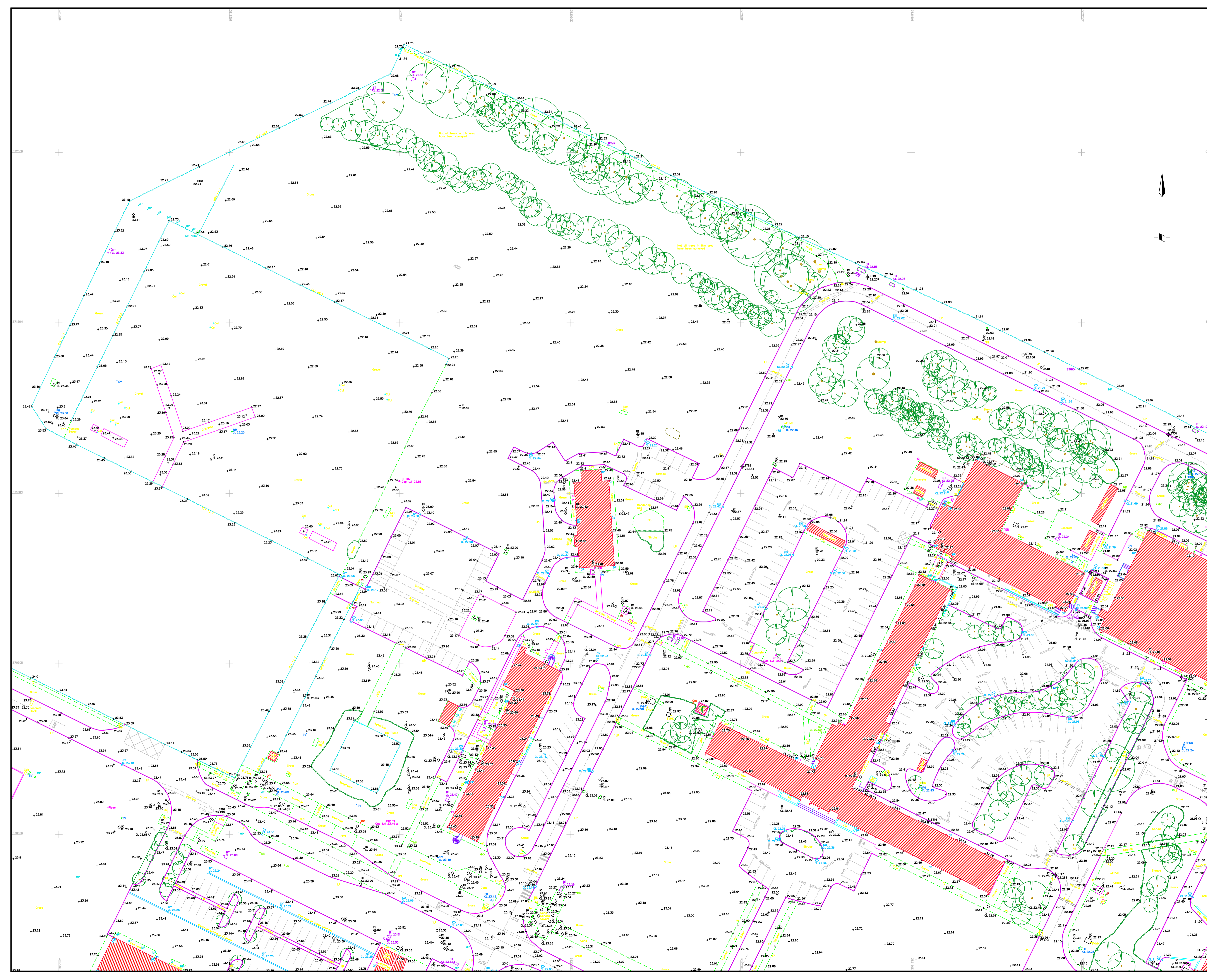
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TOPOGRAPHICAL SURVEY

Drawing Number: V14391_SX	Revision:	
Scale: 1:500	Sheet: A1 4of14	Survey Date: 02.2015
Drawn: RDJB/KB	Checked: DIL	Project Number: V14391



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SURVEY STATION SCHEDULE

STN	TYPE	EASTINGS	NORTHINGS	LEVEL

ABBREVIATIONS

- | | | |
|---------|---------------------------------------|------------------------------------|
| General | (A) Approximate | IC Inspection Cover |
| | AF Assumed Fence | IL Invert Level |
| | AR Assumed Route | IR Iron Rail Fence |
| | AV Average | IRW Inter Woven Fence |
| | BD Bollard | KO Kerb Outlet |
| | BR Brick | L Ladder |
| | Bld Building | LP Lamp Post |
| | BW Block Wall | MH Manhole |
| | BS Bush | MHR Metal Hand Rail |
| | BT British Telecom Inspection Chamber | MK Marker |
| | BW Brick Wall | MK Metal Post & Rail Fence |
| | BWF Barbed Wire Fence | MRF Metal Post & Rail Fence |
| | CB Cabinet | OC Overhead |
| | CBF Crash Barrier | O/S Outline |
| | CDC Concrete Drainage Channel | OSB Ordnance Survey Bench Mark |
| | CE Concrete Edging | PAF Pavement |
| | CH Chestnut Paving | Pav Pavement |
| | CI Cable into Ground | PI Pipe into Ground |
| | CP Corrugated Iron Fence | PL Plinth |
| | CL Cover Level | RE Road |
| | CL Chain Link Fence | RE Rodding Eye |
| | CM Coble Marker | RSL Road Sign |
| | Col Column | RS Rolled Steel Joist |
| | Conc Concrete | RT Retaining Wall |
| | CP Concrete Post | SD Shed |
| | CPS Concrete Paving Slabs | SE Stone Edging |
| | CT Cable TV Inspection Chamber | Sec Security Fence |
| | CW Concrete Wall | Shb Shrub |
| | d Depth | SL Soft/Light Level |
| | DI Dilapidated | Spot Spot |
| | DK Drop Kerb | SN Sign |
| | DP Rainwater Down Pipe | SV Stop Valve |
| | DOW Dry Stone Wall | SVMK Stop Valve Marker |
| | Ea Earth | SW Stone Wall |
| | EIC Electricity Inspection Chamber | SWD Storm Water Inspection Chamber |
| | EM Electricity Meter | SY Slay |
| | EP Electricity Pole | T Tor |
| | ER Earth Road | THL Threshold Level |
| | ETL Electricity Transmission Lines | TL Traffic Light |
| | F Fence | TMC Traffic Management IC |
| | FMK Fire Hydrant Marker | TP Telephone Transmission Line |
| | FL Floor Level | UG Underground |
| | Fl Flowerbed | UTL Unable To Lift |
| | FP Floodlight | UP Underground Paving Slabs |
| | FP Floodpath | V Vent |
| | FWIW Foul Water Inspection Chamber | VP Vent Pipe |
| | GM Gas Meter | W Wall |
| | GMK Gas Marker | WE Wood Edging |
| | GP Gate Post | WL Water Level |
| | Gr Grass | WM Water Meter |
| | GUL Gully | WMF Wire Mesh Fence |
| | H Height | WMK Water Meter Marker |
| | Hc Hardcore | WO Wash Out |
| | IB Illuminated Bollard | WP Wooden Post |
| | | WPR Wooden Post & Rail Fence |

NOTES

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 TOPOGRAPHICAL SURVEY

Drawing Number: W15027_SX
Revision:

Scale: 1:500
Sheet: A1 5of14
Survey Date: 03:2015

Drawn: BR
Checked: RDJB
Project Number: W15027