Eleanor Blackeby
Permitting and Support Centre
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Ref: EPR/VP3435DS/V002

18 December 2020

Dear Eleanor,

Please see below our response to your additional application information letter dated 07/12/2020 regarding the below application:

Application Reference: EPR/VP3435DS/V002

Operator: Magna International Holding (UK) Limited

Facility: Cosma Casting UK

The responses below are numbered in accordance with the EA additional application information letter.

1. **Application Fee**: You have paid £12,586 which leaves a balance of £1,246 to pay. This is required as a noise impact assessment was submitted alongside the substantial variation which also requires assessment by the EA. Ref 1.19.7 Noise Management Plan from the Agency's Schedule of Charges Table.

Response to Question 1:

WSP have confirmed with Magna International Holding (UK) limited that they will arrange for the additional balance of £1,246 to be paid to the EA.

2. **Noise Impact Assessment**: The noise impact assessment needs to include:

2a. A site plan showing the installation permitted boundary.
2b. A map showing the location of sensitive receptors in terms of their proximity to the installation.
2c. Accompanying modelling files or calculation spreadsheet if applicable.

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Response to Question 2:

2a. Please refer to Appendix A of this document which contains a site plan showing the installation permitted boundary outlined in red. Note this was not originally included in the permit variation application as the plan had already been included in the original permit application for the facility and there has been no change to the installation boundary.

2b. Please refer to Appendix B of this document which contains a map showing the location of sensitive receptors which are within proximity to the installation; these are the receptors that were adopted as noise assessment locations. The map was previously included as Appendix B to the Noise Assessment submitted as part of the permit variation application, however, further annotation has been provided for clarification.

2c. Please refer to the separate attachment to the email containing this document which contains the relevant modelling files.

3. **Form C2:** In response to question 5, please provide a site plan showing the installation permitted boundary and emissions points to air.

Response to Question 3:

Figure 6.1 in the permit variation application shows, in detail, the location of each point source emission to air. This figure has been superimposed onto the site plan showing the installation boundary and included in Appendix C of this document. Please note that the emission point locations are approximate.

4. **Form C2**: In response to question 6, provide further information to justify why you have not undertaken detailed modelling of emissions to air. In the H1 screening tool supporting your application, benzene does not screen out and we therefore expect to see detailed modelling unless you have fully justified why it is not required.

Response to Question 4:

Environmental permitting risk assessment guidance on the GOV.UK website advises that if the composition of VOC release is unknown, the emissions should be considered to comprise 100 % benzene. This approach was used in the H1 assessment performed to provide a precautionary assessment of potential impacts.

In reality, benzene will not be present in the emissions to air from the site / furnaces and any such process releases of VOCs will primarily comprise lower hydrocarbons, such as methane. Therefore, whilst benzene does not screen out using the H1 tool, the assessment results for this parameter are considered to be overly conservative and they do not warrant detailed air dispersion modelling.

Furthermore, an Air Quality Assessment for the site was undertaken in 2017 and submitted to the Environment Agency to support the original environmental permit application. This included the assessment of benzene in the emissions to air from the four original furnaces and modelled the predicted impact at local sensitive environmental receptors. Again, the assessment is considered

to be conservative as benzene emissions are not expected from the site, but the results showed that none of the predicted concentrations at the receptors modelled exceeded the Environmental Assessment Level (EAL). The highest concentration predicted at a receptor (Receptor 6 – Hayloft, Blythbury Farm) was 0.7 ug/m^3 compared to an EAL of 5 ug/m^3 and, therefore, even with a 50 % increase in emissions (to reflect the operation of 6 furnaces instead of 4), the results would be well within the EAL.

A map showing the receptors included in the 2017 Air Quality Assessment and the resultant contour plot for VOCs is provided in Appendix D of this document. The contour plot was generated using the 2013 meteorological data set as this gave the highest pollution concentrations at the majority of the selected receptors out of all of the five years meteorological data used in the modelling.

The Air Quality Assessment concluded that the predicted concentrations of benzene at local sensitive environmental receptors were below the relevant EAL and, therefore, the potential impact is considered insignificant. For the reasons described above, these conclusions are still considered to be valid with six furnaces operating instead of four. The full Air Quality Assessment for the site from 2017 can be provided to the Environment Agency again, if required.

5. **Form C3:** In response to question 2, provide the National Grid Reference for each point source emission to air.

Response to Question 5:

Please see the table below for approximate National Grid References for each point source emission to air. These have been estimated using the 'UK Grid Reference Finder' website.

Point Source Emission to Air Reference:	**Release Point:**	**Process Source:**	**Approximate National Grid Reference:**
Existing Point Source Emissions to Air:			
A1	20 m (agl) stack	Melting furnace	SJ 718078
A2	20 m (agl) stack	Melting furnace	SJ 718077
A3	20 m (agl) stack	Melting furnace	SJ 718077
A4	20 m (agl) stack	Melting furnace	SJ 718077
A5	20 m (agl) stack	Heat treatment – solution furnace	SJ 718078
A6	20 m (agl) stack	Heat treatment – ageing furnace	SJ 718078
A7	18 m (agl) stack	Air quench	SJ 718078

A8	18 m (agl) stack	Gardoclean surface treatment	SJ 717077
A9(a)	20 m (agl) stack	Boiler	SJ 718079
A9(b)	20 m (agl) stack	Boiler	SJ 718079
A9(C)	20 m (agl) stack	Boiler	SJ 718079
A10	20 m (agl) stack	Grinding cell	SJ 718078
A14	11 m stack	Compressor house (warm air only)	SJ 717078
New Point Source Emissions to Air:			
A15	20 m (agl) stack	Melting furnace	SJ 719078
A16	20 m (agl) stack	Melting furnace	SJ 718077
A17	2.6 m (agl)	Back-up diesel generator – 1.4 MW thermal input	SJ 718079

6. **Form C3**: In response to question 3, provide a review of the new furnaces against relevant BAT requirements.

Response to Question 6:

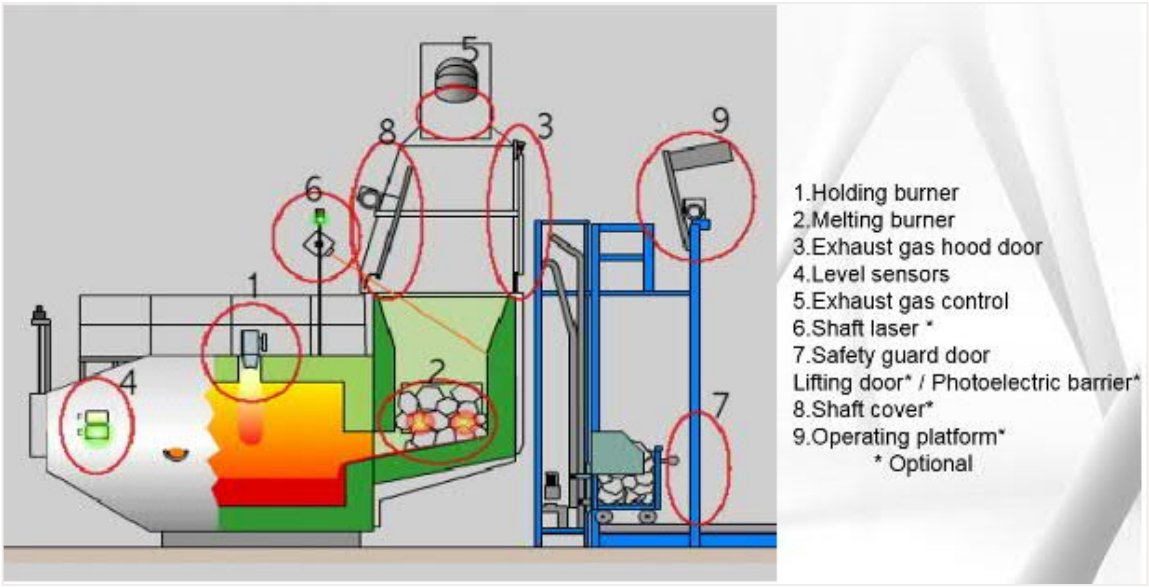
The two new melting furnaces which are proposed comprise 2 x StrikoMelter® MH II-N 6000/3000 melters. These are exactly the same as two of the existing melters on site.

BAT requirements for these melters were assessed in the original environmental permit application which was submitted to the Environment Agency in 2017. These have been repeated below as they remain relevant to the new furnaces being installed as part of the permit variation application.

Aluminium shaft or stack furnaces are widely accepted as a modern operational and sound environmental choice because of their higher energy efficiency compared to that of the reverberatory furnace. The shaft melter efficiency is improved by better sealing of the furnace and the use of the flue gases to preheat the charge materials. The charge materials slide down the shaft and reach the melting zone where they are melted by the burners and the molten metal flows down to the holding area. The hot exhaust gases from the melting zone flow through the shaft to preheat the incoming charge, improving the energy efficiency of the shaft furnace by 40 to 50 %. Melt loss is also dramatically improved from 4-8 % in a reverberatory furnace, down to 1 % or less in a well operated shaft melter.

An overview of the shaft furnace's key operational components is shown in Figure 1 below.

Figure 1 – StrikoMelter Overview



The raw materials (comprising virgin aluminium alloy ingots and clean off-cuts / rejects generated by the on-site casting process) will be loaded into the furnaces via bin elevators. The furnaces will have electronically operated lifting doors with automatic sealing to the furnace body in closed position. Small quantities of magnesium, strontium and titanium will be added to the melt, as required, in order to maintain the correct alloy composite. The melting process will be a continuous operation of melting aluminium alloys.

The StrikoMelter® MH II-N 6000/3000 furnaces include two separated chambers for melting and holding purposes with a side-by-side layout, and similarly, two separated burner systems and control circuits, for the melting and holding burners. The furnaces run in two different operating modes; the holding mode, where the aluminium in the unit is kept at the required temperature, and the melting mode itself.

In holding mode, the holding burners are switched on and off as required (control of the set temperature of the melt). The activation period of the holding burners is approximately 20 % as the melting burners are not in operation. In melting mode the aluminium on the melting bridge is melted and the liquid metal flows into the holding chamber. The holding temperature of the aluminium bath (approximately 760 °C) is always higher than the melting temperature (approximately 580 - 660 °C); the burners must therefore increase the temperature of the melted aluminium. The activation period of the holding burners increases to approximately 80 %. The waste gases of the melting and holding burners pre-heat the charged material in the shaft.

The furnaces use the application of high quality abrasion-resistant refractory materials and highly efficient insulating materials for reduced energy consumption. The refractory linings designed to come into contact with molten aluminium contain metal repelling agents; these agents prevent incrustations from baking to the lining and infiltration of aluminium into the refractory material. Monitoring and control of the metal temperature in the holding chamber is via a measurement point in the metal bath. When the alloy reaches a molten state it is ready for processing and it will be transferred via a launder system to the holding furnaces located at the die cast machines.

The furnaces are non-tiltable and will contain a tapping valve and pump pocket for installation of an over flow pump to transfer liquid metal from the furnace into the launder system.

Each holding bath will have a porous plug system installed in the bottom of the bath; this will allow homogenisation and cleaning of the melt in the holding bath and the feed of gas (argon) into the furnace for purging. By the porous plugs two effects are achieved. Firstly, the melt is pre-cleaned and the density index is reduced. Secondly, purging generates a movement of the melt in the holding bath, which creates a plain heat distribution within the melt in the holding bath (heat distribution through bath depth).

The furnace units will be set up for extensively automated control of the complete furnace plant, controlled via PLC with a 12" operator input and monitoring display unit. The optimised design and operational characteristics of the StrikoMelter® MH II-N 6000/3000 furnace mean that it can produce a better quality metal compared with single chamber furnaces and, hence, dross with a lower metal content. The manufacturer quotes a metal yield of $\geq$98.5 % and, in its reference test, a melting energy consumption of 525 kWh/t was achieved. The improved refractory lining means that the furnaces also achieve the best possible thermal isolation. This isolation further decreases the already minimised energy consumption.

Each furnace will be provided with a completely insulated and closed waste gas hood system for the central collection and conduction of waste gas into a contained stack. This will also serve to provide heat protection and noise reduction (from the burners). There will be a flue cover (baffle) integrated into each waste gas hood to cover the melting shaft opening and interrupt the chimney draft during holding operation. By using this automated flue cover energy savings of up to 50 % can be achieved during holding, as well as slowing the cool time when the unit is switched off. In combination with the shaft filing level control, the baffle will be closed automatically during holding operation.

With regard to specific BAT standards referred to in the relevant EU BRef document, the Smitheries and Foundries BRef stipulates that for the operation of shaft furnaces, BAT is to allow efficient exhaust collection upon tilting of the furnace, and to evacuate the exhaust gas through a stack, taking into account the following BAT associated emission levels:

- Dust – 1-20 mg/m^3
- SO_2 – 30-50 mg/m^3
- NO_x – 120 mg/m^3
- CO – 150 mg/m^3
- VOC – 100-150 mg/m^3

The manufacturer's specification for the proposed StrikoMelter® MH II-N 6000/3000 confirms that these emission levels can be met, as does the operational monitoring data for the existing furnaces on site. Note that the SO_2 emission level is not relevant to the Magna site as sulphur oxides are only produced during combustion if there is a source of sulphur present and the Magna furnaces will be run on natural gas, which is a low sulphur fuel.

I trust that the information provided above answers all of your questions adequately, but should you have any further queries, please don't hesitate to contact me.

Yours sincerely

Karen Phillipson

Appendix A – Site Plan showing Installation Boundary

scale

1:500 0 10 20 30m

North

notes

1. This drawing is based on third party information, which may be inaccurate. Verification shall be obtained by independent professional survey.
2. This drawing is based on survey information dated 29.01.15 and supplied by SV Surveying Limited - Drawings Number 14164-15-01A.
3. Drainage design is based upon information provided by WSP, please refer to WSP drawings for further details and specifications.
4. Highways design is based upon information provided by WSP, please refer to WSP drawings for further details and specifications.
5. Proposed development outside red line boundary are indicative only.
6. Landscaping proposals are indicative only, please refer to WSP drawings for further details and specifications.

EXISTING TREES AND WOODLAND (TO BE RETAINED)

PROPOSED STRUCTURED WOODLAND PLANTING

SUDS POND

LANDSCAPED AREA

Eastern Drainage Swale

CYCLE STANDS

GENERAL BIN STORE

HGV STACKING / WAITING AREA

SKIP STORAGE AREA

RACKING

LOADING / SHIPPING

PLANT

GAS TANK STORAGE AREA + EXTERNAL CHILLER PLANT

OFFICE

EARTHWORK EMBANKMENTS

AREA TO BE GRASS SEEDED

WEIGH BRIDGE

FOUNDRY

OFFICE + PLANT

226 STAFF CAR PARK + 10 DIS.

DELIVERIES

VEHICLE ACCESS DOORS

HGV BARRIER

CAR BARRIER

Southern Drainage Swale

Western Drainage Swale

2.4m x 59m (37mph MfS)

EXISTING TREES AND WOODLAND (TO BE RETAINED)

Nedge Hill

Gas Governor

Gas Governor

LANDSCAPED AREA

PROPOSED STRUCTURED WOODLAND PLANTING

LANDSCAPED AREA

SUDS POND

ELEC. SUBSTATION

& CP Bdy

Boro Const & UA Bdy

Co Const & CP Bdy

KEY:

- Proposed landscaped areas
- Earthwork embankments
- Proposed structured woodland planting
- Existing trees and woodland (To be retained)
- SUDS Drainage System
- Retaining wall
- Access roads and service yards
- Car park roadways
- Car Park Parking Bays
- Footpaths and pedestrianised hardstanding areas
- Proposed building

rev	description	drawn	checked	date
P07	Layout amended as instructed by PR / Magna 11.06.16	DM	FH	12.05.16
P06	Layout amended as instructed by PR / Magna 05.06.16	DH	FH	06.05.16
P05	Layout amended as instructed by BG / Magna 04.05.16	DH	FH	05.05.16
P04	Layout amended as instructed by SB / T&T 29.04.16	DH	FH	03.05.16
P03	Planning issue.	DH	FH	01.04.16
P02	Layout amended to include updated highways, earthworks, drainage and landscaping arrangement.	DH	FH	18.03.16
P01	First issue	DH	FH	11.03.16

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Magna CCUK Aluminium Foundry
Plot 6, T54, Telford
Manufacturing Facility

MAGNA CCUK

MAGNA COSMA INTERNATIONAL

PROPOSED SITE PLAN

bba project ref	scale(s)	original paper size
15-203	1:500	A0

name :

project	originator	volume	level	type	role	number
CCUK	BBA	00	XX	DR	A	1003

status : D5 ISSUED FOR PLANNING

revision : P07 PRELIMINARY

Appendix B – Location of Sensitive Receptors (Noise Impact Assessment)


Key
Measurement Location
Dwelling
Position 3
Non-residential receptors
Magna
Position 2
Position 1
0 50 100 150 200
m
Imagery ©2020 , CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies
Imagery ©2020 CNES / Airbus, Getmapping
wsp
TITLE:
Magna
FIGURE No:
B-1
File: Created using iGIS, WSP's Online Mapping System
Drawn By: UKNMH003
Date Modified: 16/12/2020 09:16

Appendix C – Site Plan showing Installation Boundary & Point Source Emissions to Air

scale

1:500 0 10 20 30m

North

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EXISTING TREES AND WOODLAND (TO BE RETAINED)

PROPOSED STRUCTURED WOODLAND PLANTING

SUDS POND

LANDSCAPED AREA

Eastern Drainage Swale

CYCLE STANDS

GENERAL BIN STORE

HGV STACKING / WAITING AREA

2.4m x 59m (37mph MfS)

EXISTING TREES AND WOODLAND (TO BE RETAINED)

Nedge Hill

Gas Governor

Gas Governor

EARTHWORK EMBANKMENTS

AREA TO BE GRASS SEEDED

WEIGH BRIDGE

A17

A14

A9 a, b & c

A8

A10

A7 Inlet

A6

A5

A7 Outlet

DELIVERIES

A4

A16

A3

A2

A1

A15

226 STAFF CAR PARK + 10 DIS.

EARTHWORK EMBANKMENTS

LANDSCAPED AREA

PROPOSED STRUCTURED WOODLAND PLANTING

HGV BARRIER

CAR BARRIER

Southern Drainage Swale

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& CP Bdy

Boro Const & UA Bdy

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MAGNA CCUK

MAGNA COSMA INTERNATIONAL

PROPOSED SITE PLAN

bba project ref	scale(s)	original paper size
15-203	1:500	A0

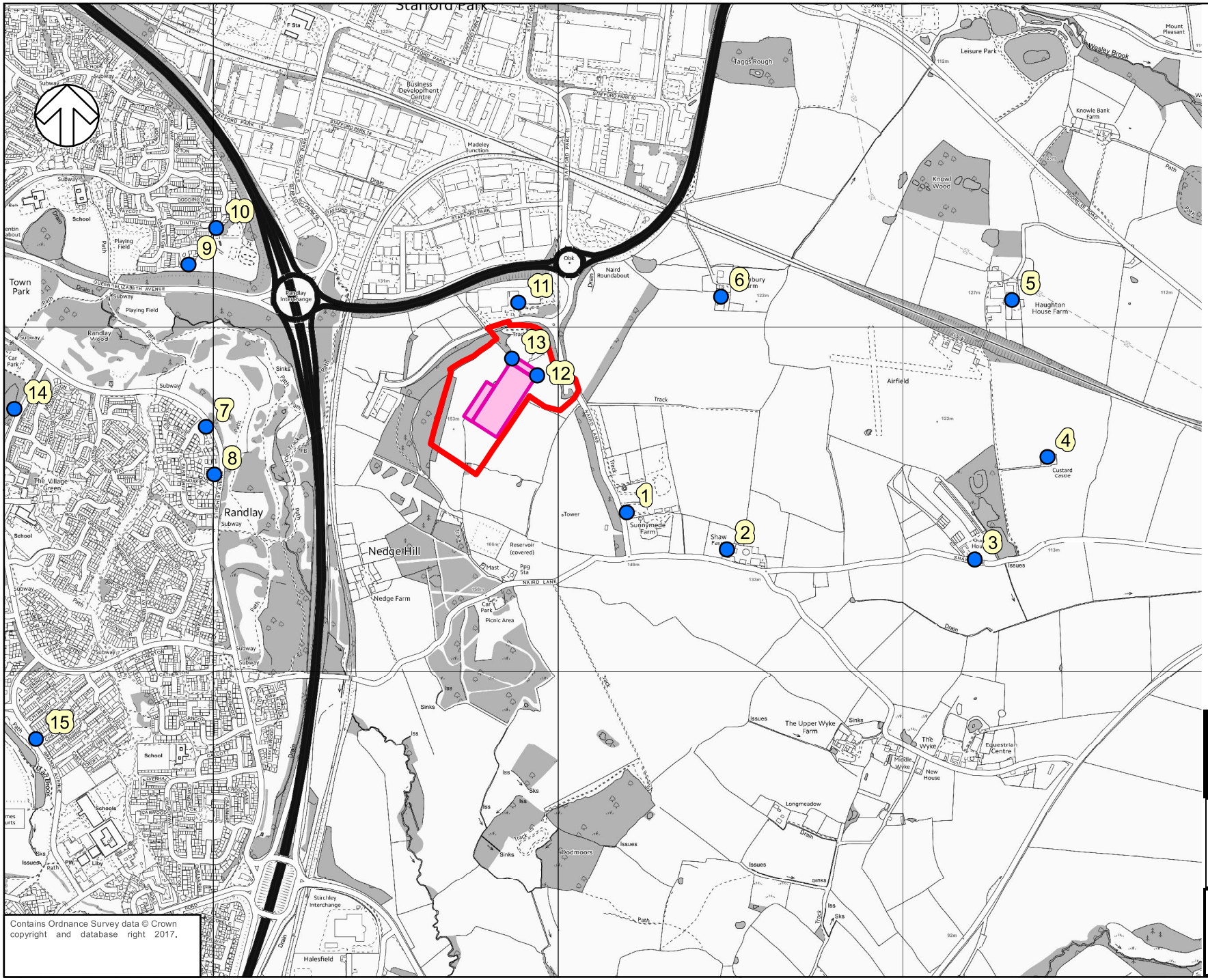
name :

project	originator	volume	level	type	role	number
CCUK	BBA	00	XX	DR	A	1003

status : D5 ISSUED FOR PLANNING

revision : P07 PRELIMINARY

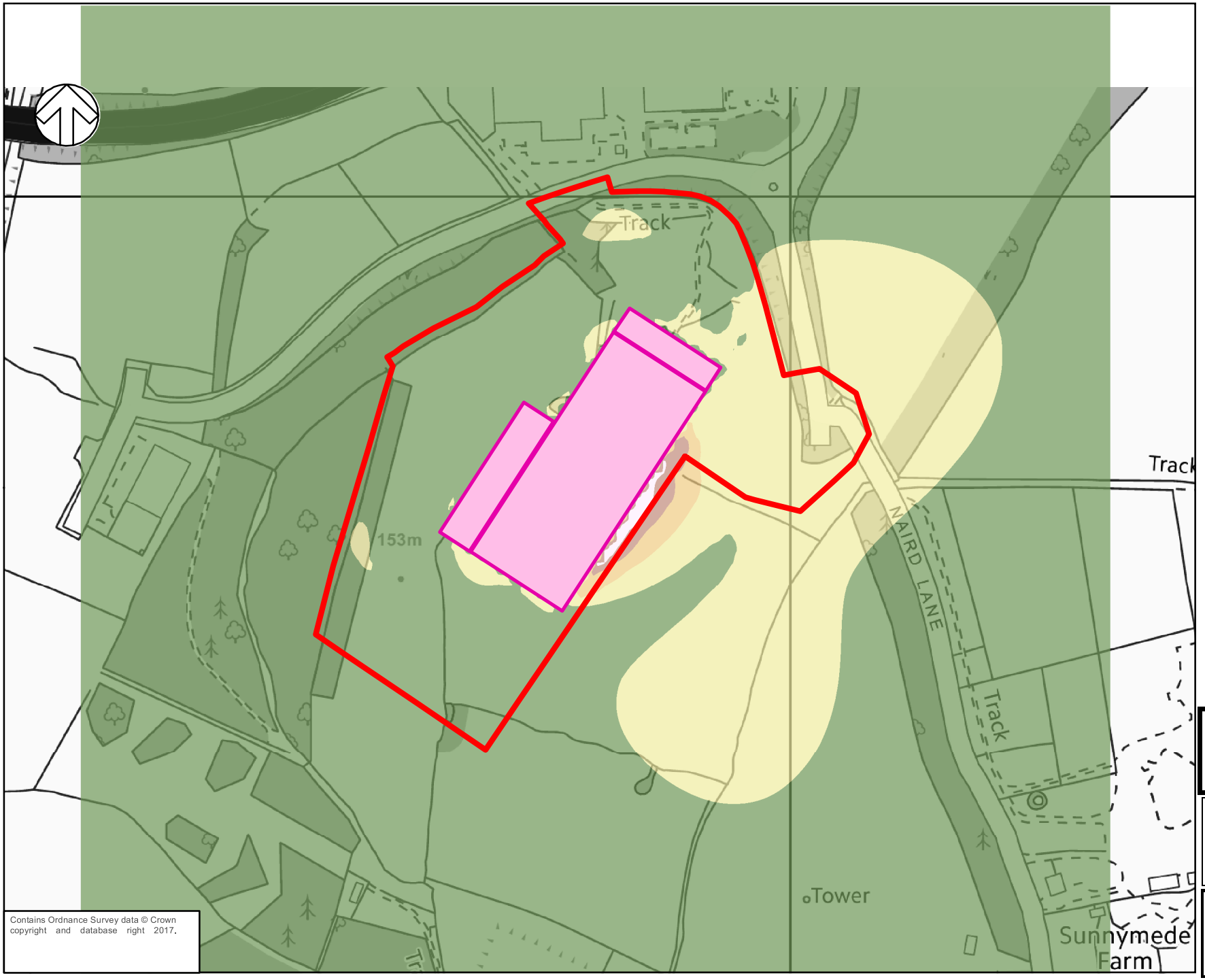
Appendix D – Site Plan showing Sensitive Environmental Receptors & Contour Plot for VOCs (both from 2017 Air Quality Assessment)



WSP

TITLE:
LOCATION OF ASSESSMENT RECEPTORS & PROPOSED BUILDINGS

FIGURE No:
FIGURE 1



Key

- Site Boundary
- Proposed Buildings

Annual Mean VOC

- 0.29 - 1.18
- 1.18 - 2.07
- 2.07 - 2.96
- 2.966 - 3.85
- 3.85 - 4.74

WSP

TITLE:
ANNUAL MEAN VOC CONCENTRATIONS (MICROGRAMS/M3)

FIGURE No:
FIGURE 10