FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
STONEGATE, SPALDING

FINAL REPORT

ECL1661/SEVEN22 ARCHITECTURE

DATE OCTOBER 2025

ELLINGHAM CONSULTING LTD
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1.0 INTRODUCTION

This Flood Risk Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and supporting planning practice guidance (PPG) on Flood Risk and Coastal Change.

In areas at risk of flooding or for sites of 1 hectare or more, developers are required to undertake a site-specific Flood Risk Assessment to accompany an application for planning permission. This Flood Risk Assessment has been produced on behalf of Mr & Mrs Drury in respect of a proposed development that consists of a residential dwelling on Stonegate, Spalding.

A planning application for the proposed development is to be submitted by Seven22 Architecture.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at 26 Stonegate, Spalding, Lincolnshire, PE11 2PH. The National Grid Reference of the site is 52523/32227.

The location of the site is shown in Figure 1.

Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the western side of Stonegate. The site consists of a residential dwelling and the surrounding land that forms its garden. The site is surrounded by residential dwellings. The area of development is approximately 0.25 hectares.

Environment Agency LiDAR shows that ground levels within the site are typically +2.7m OD. The carriageway level if Stonegate adjacent to the site is between +2.7m OD and +2.8m OD.

The site is in the South Holland Internal Drainage Board (IDB) District. Surface water at the site drains through a local network and hence to the IDB drain system. There is an IDB High Priority Watercourse, Exeter Drian, approximately 250m east of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by Oxford Clay Formation mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

2.3 Proposed Development

The proposed development consists of a self-build residential dwelling. The dwelling will have two storeys with all habitable accommodation on the first floor. Details of the proposed development are provided in Attachment 1.

2.4 Local Development Documents

The South East Lincolnshire Local Plan 2011 – 2036, adopted in March 2019, is the Local Plan for the district. Policy 4: Approach to Flood Risk states the requirements for flood risk reduction.

The South East Lincolnshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) was prepared in June 2017.

The Joint Lincolnshire Flood Risk and Drainage Management Strategy has been prepared by Lincolnshire County Council as the Lead Local Flood Authority. The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

2.5 Flood Zones

An extract from the Environment Agency Flood Map for Planning is shown in Figure 2. The site is located within Flood Zone 3, an area with a high probability of flooding.

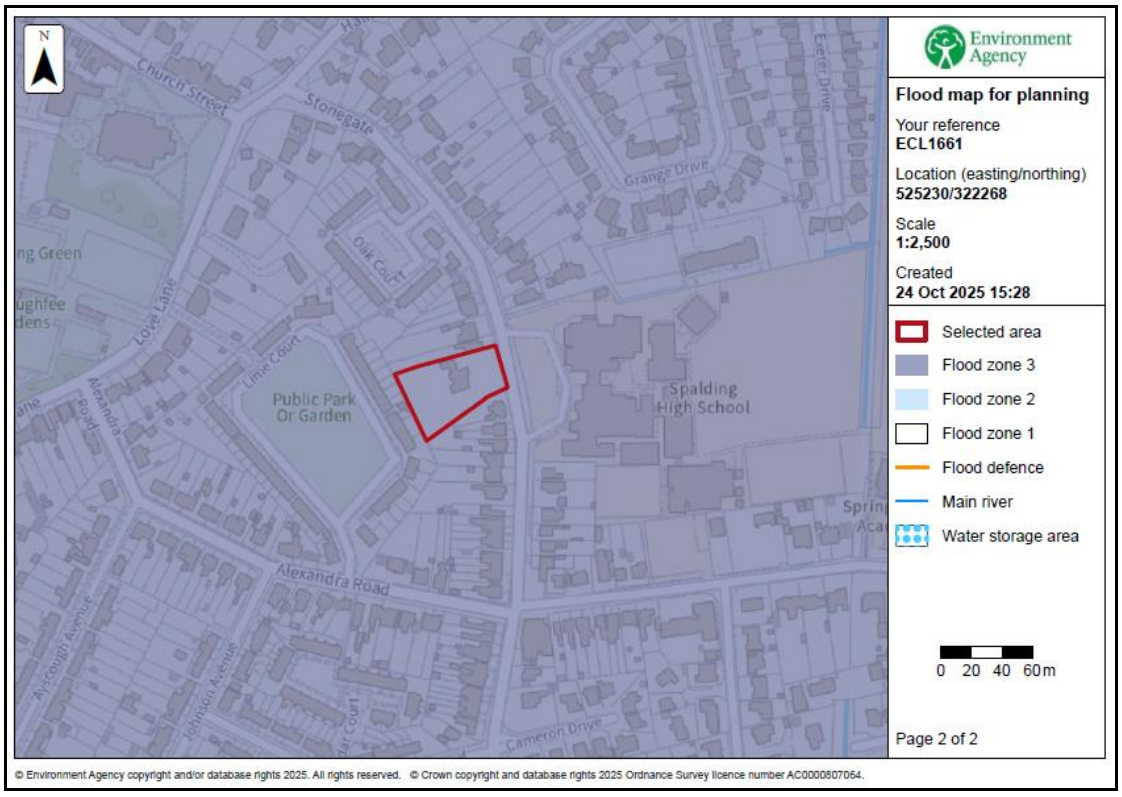

Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps provide an indication of the risk from the primary sources of flooding. The details provided with these maps are summarised in Table 1. The depth of flooding identified is the maximum depth that occurs during a low chance (between 0.1% and 1% chance each year) event.

	Present Day		2050 Epoch	
	Chance of Flooding	**Depth (Low chance)**	**Chance of Flooding**	**Depth (Low chance)**
Rivers and the Sea	The site has a medium chance (between 1% and 3.3% chance each year)	No data available	No data available	No data available
Surface Water	Part of the site have a low chance (between 0.1% and 1% chance each year)	During low risk events depths are up to 0.2m	Part of the site have a low chance (between 0.1% and 1% chance each year)	During low risk events depths are up to 0.2m
Reservoir	Outside of the area at risk			

Table 1 – Environment Agency Long Term Flood Risk Maps

Table 2 shows the level of risk at the site within the South East Lincolnshire SFRA.

SFRA Map	Present Day	2116
Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event	The site is in the 'Danger for All' area	The site is in the 'Danger for All' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal event	The peak flood depth at the site is greater than 2.0m	The peak flood depth at the site is greater than 2.0m

Table 2 – Flood Risk within SFRA Maps

3.0 FLOOD RISK VULNERABILITY

3.1 The Sequential and Exception Test

The NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding.

The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

3.2 Vulnerability Classification

Table 2 of the PPG Flood Risk and Coastal Change categorises different types of uses and development according to their vulnerability to flood risk. The proposed development is covered by the description of buildings used for dwellings and is classified as 'More Vulnerable'.

Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'. The site is in Flood Zone 3 and the development is 'More Vulnerable' therefore it is necessary to complete the Exception Test.

PPG Flood Risk and Coastal Change defines that the lifetime of the development in terms of flood risk and coastal change is 100 years.

3.3 Application of the Sequential Test and Exception Test

It is for the Local Planning Authority, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

Large parts of the South Holland district close to the River Welland lie within Flood Zone 3. As such, opportunities to undertake the development at an alternative site with a lower flood risk are limited. The Environment Agency Flood Maps for Planning show that the whole of Spalding is within Flood Zone 3. In this context it is noted that SE Lincolnshire Local Plan residential allocations are within flood risk areas due to the lack of availability of sites within areas of lower flood risk.

The planning practice guidance (PPG) on Flood Risk and Coastal Change states that '*The sequential test should be applied proportionately, focusing on realistic alternatives in areas of lower flood risk that could meet the same development need.*' The self-build nature of the proposed dwelling is meeting a specific development need. It is understood that the demand for self-build dwellings exceeds the current level of approved self-build dwellings.

Based upon the availability of sites in Flood Zone 1 or 2 and the demand for self-build dwellings exceeding the supply the development is considered to pass the Sequential Test.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

The Local Plan has a target of a net increase of at least 11,681 dwellings in South Holland over the 25-year local plan period. The Plan considers this new housing is required to ensure the sustainability of the Local Plan area. The proposed development will contribute to this target.

Section 5 of this Flood Risk Assessment describes the flood mitigation measures and the management of the residual risks, demonstrating that this development will be safe and not increase flood risk elsewhere. The development is considered to pass the Exception Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 400m east of the River Welland. The site is 600m north of the Coronation Channel, a bypass channel of the River Welland. The embankments of the Coronation Channel were constructed in the 1950's to convey river flows around Spalding. The Coronation Channel together with the Crowland and Cowbit Washes offer flood reduction to Spalding and the surrounding district. The River Welland and the Coronation Channel are the responsibility of the Environment Agency.

There is a long-term strategy for the maintenance of the Environment Agency defences which is reviewed and updated periodically.

There is an extensive local drainage network managed by South Holland IDB. There is an IDB High Priority Watercourse 250m east of the site. The site and surrounding land are within the Clay Lake catchment and drain by gravity to Clay Lake Pumping Station. The pumping station discharges to the Coronation Channel.

During the operation and maintenance of its pumping stations, associated structures, and channel systems, the IDB seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Boards assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the South Holland Internal Drainage Board and the Environment Agency are generally good.

4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 3.

Source of Flooding	Level of Risk
Drainage Network Flooding	This risk is assessed in Section 4.3.
Surface Water Flooding	Based upon the Environment Agency maps the site has a low risk of surface water flooding.
Fluvial Flooding	The risk of fluvial flooding is assessed in Section 4.3 and 4.5
Tidal Flooding	The site is not at risk of tidal flooding.
Reservoir Flooding	The residual risk of a breach is assessed in Section 4.6.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 3 – Sources of Flooding

4.3 Probability of Flooding

The probability of flooding associated with blockages in the South Holland IDB drainage system is low due to the maintenance standards achieved and managed by the IDB. Failure of Clay Lake Pumping Station could increase the level of risk in the IDB Catchment.

Through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 years and 1 in 100 years, respectively. The risk associated with flood events that exceed the standard of protection provided is lowered due to the South Holland IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The Coronation Channel earth embankment has a minimum crest level of +6.0m OD. The 1% annual probability (1 in 100 chance each year) peak flood level inclusive of climate change during the next 100 years in the River Welland is +5.45m OD. The Coronation Channel embankment provides a standard of protection of 1% annual probability (1 in 100 chance each year) with a minimum 0.55m freeboard.

The Cowbit Road on the eastern side of the River Welland provides protection during the 1% annual probability (1 in 100 chance each year) event.

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded.

4.5 Climate Change

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network and increased flood levels in the River Welland and Coronation Channel.

The River Welland defences have been designed to include an allowance for climate change.

In summary the existing systems and defences are appropriate for the design life of the development (i.e. 100 years).

4.6 Residual Risk

There is a residual risk of flooding in the area near the site should a breach occur. The South East Lincolnshire SFRA includes maps demonstrating the impact of a breach in 2116. When the climate change allowances are applied to the combination of a 1% annual probability (1 in 100 chance each year) fluvial event and a 0.5% annual probability (1 in 200 chance each year) tidal event the peak flood

depth during a breach is greater than 2m. An extract from this map is shown in Figure 3 below.

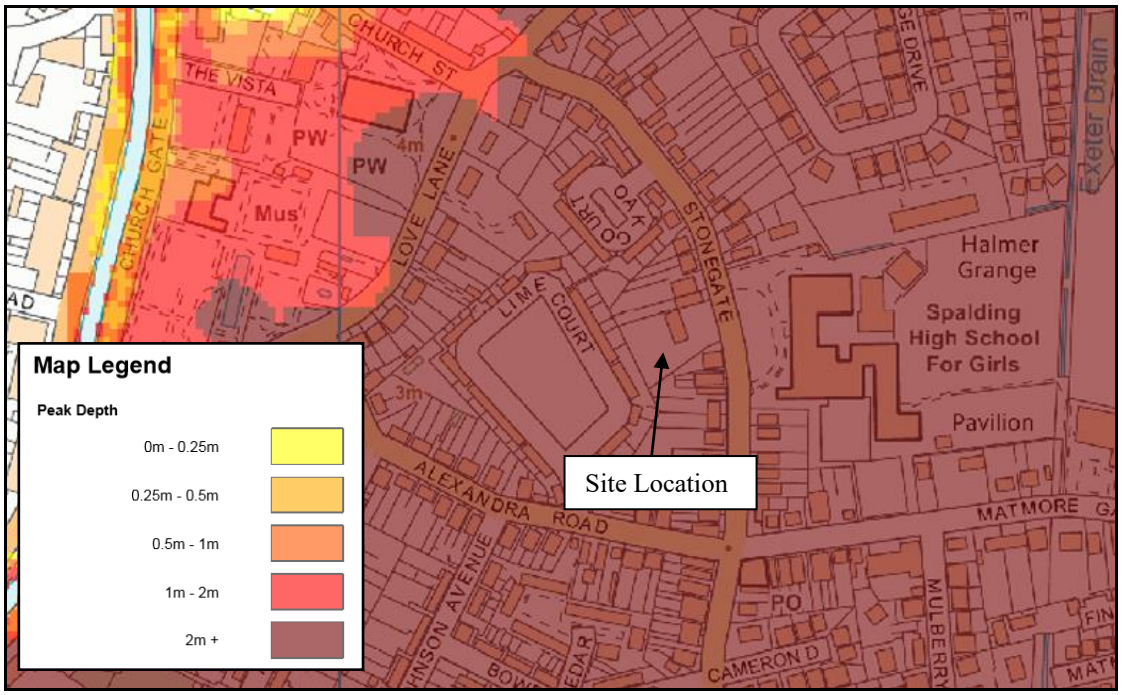

Figure 3 – SFRA 2116 Residual Peak Depth Map

Based upon LiDAR and the residual peak depth map the breach flood level in the vicinity of the site has been estimated to be +5.1m OD. This is a depth of 2.4m at the site.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Clay Lake Pumping Station could lead to an increased level of risk at the site.

The probability of the site flooding from any Environment Agency system is less than 1% annual probability (1 in 100 chance each year) because of the standards of the existing flood defences. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development, it is not anticipated that the site would flood from overtopping of the defences.

The SFRA considers the residual risk associated with a breach in the defences in 2116. The site is at risk with an estimated peak depth of 2.4m.

The proposed arrangement increases the impermeable area and therefore there will be an increased volume of surface water that has the potential to increase flood risk.

These risks will be addressed through the mitigation measures set out below.

5.2 Mitigation Measures

The site has a low 'actual risk' of flooding. The proposed mitigation measures are in accordance with the South East Lincolnshire SFRA Standing Advice (Cell C8). Based upon the information available during the preparation of this flood risk assessment, it is proposed that:

- the dwelling will have two storeys with no ground floor habitable accommodation;
- habitable floor levels should be a minimum of 2.4m above ground level; and
- flood resilient measures are considered up to first floor level.

The developer should ensure that the eventual occupier of the dwelling is sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency operates a flood warning system for properties at risk of flooding to enable householders to protect life or take actions to manage the effect of flooding on property. Floodline Warnings Service is a national system run by the Environment Agency for broadcasting flooding warnings. The occupier of the dwelling should register to receive flood warnings.

Should there be a failure of Clay Lake Pumping Station and conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by using temporary pumping equipment.

Surface water run-off will be managed so that stormwater from the development will not affect any adjoining properties or increase the flood risk elsewhere.

6.0 CONCLUSION

As a result of the assessment, the following conclusions have been reached.

- The proposed development consists of consists of a two storey residential dwelling at Stonegate, Spalding.

- The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years, respectively.

- The proposed development is in Flood Zone 3. The site benefits from defences on the River Welland and Coronation Channel that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event including an allowance for climate change.

- During a breach of the defences the site is at risk with a peak flood depth greater than 2m.

- It is proposed that there is no ground floor habitable accommodation, habitable floor level is a minimum of 2.4m above ground, and there is flood resilient construction to first floor level.

- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

EXISTING SITE LAYOUT
(DWG 116-P01)

PROPOSED PLANS & ELEVATIONS
(DWG 116-P02)

Hedging			
Species Name	Abbreviation	Specification	Density
Photinia Red Robin	Photinia	60-90 3L	4/m Staggered

Trees		
Species Name	Abbreviation	Specification
Prunus Serrulata 'Amanogawa'	Pru'Amano	1.5-2m Feathered 15-20litre
Betula pendula, alba	B-Pend	3m high, Standard, 8-10cm girth

NOTES:

- All planting & landscape operations to comply with Landscape Specification, BS4482(1989) 'Recommendations for General Landscape Operations' and BS3936 Pt 1 (1992) 'Specification for Nursery Stock Trees and Shrubs'. All container sizes shown are minimums acceptable - all plants to be supplied to sizes indicated.
- All ornamental shrubs to be planted at regular spacings in rows set diagonally to the edge of the bed.
- All ornamental shrub beds and hedges to be provided with coarse grade bark mulch minimum 75mm deep.
- Topsoil to be 450mm deep in all shrub areas, 100mm deep in all grass areas. Tree pits to be 750 x 750 x 500mm filled with topsoil.
- Provide 250mm wide gravel margin with timber edge, where grass abuts building, 100mm deep, laid on Terram.

IMPLEMENTATION:

Landscaping work to be undertaken in the first planting season following completion of the building works.

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REV	DATE	NOTES

Legend

- Proposed Tree
- Proposed Hedge — Photinia
- Golden Gravel
- Buff Paving
- Tarmac/Asphalt
- Grass
- Location of Integrated Swift Nest Box, refer to accompanying details from Manthorpe Building Products Ltd.
- Ibstock Bat Box type 'C' integrated bat boxes. Refer to accompanying details.
- 130x130mm Hedgehog access in accordance with *'The Wildlife Trusts'* advice
- Boundary Type A
- Boundary Type B
- Boundary Type C
- BCP — Bin Collection point
- Pedestrian Visibility Splay
- 2.4x43m Visibility Splay
- Proposed Surface Water to Soakaways
- Proposed Foul Drainage Layout

N

0 1 2 3 4 5 10 20
Scale 1:200

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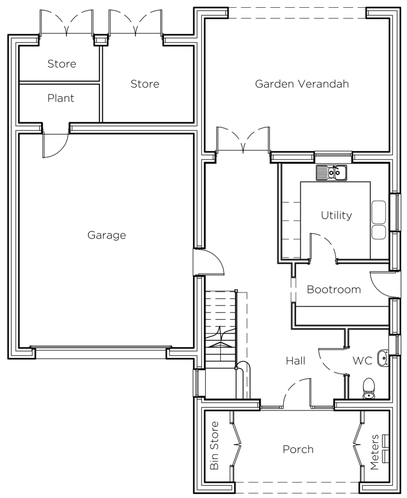
PROJECT
SELF BUILD BUNGALOW
LAND ADJACENT TO
26 STONEGATE
SPALDING
LINCOLNSHIRE
PE11 2PH

CLIENT
Mr & Mrs DRURY

TITLE
PROPOSED SITE LAYOUT

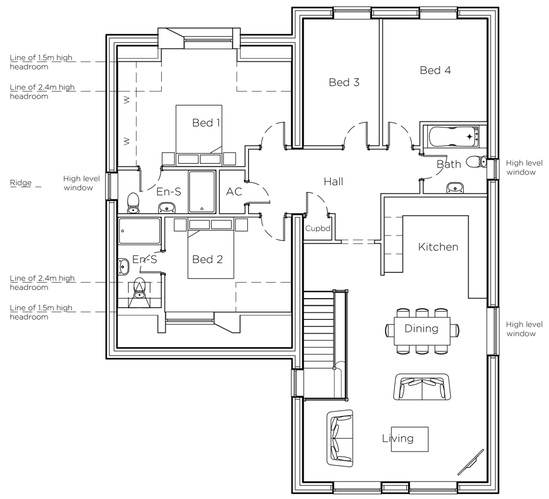
DRAWING No.
116 P01

SCALE	DATE	REV
1:200 @ A1	SEPT 2025	

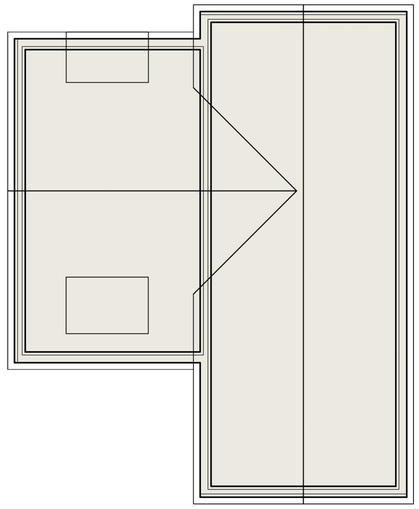


Ground Floor Plan

Ground Floor 46.7m² (Not including garage or stores)
First Floor 139m²
Total 185.7m²



First Floor Plan



Roof Plan

MATERIALS

TRADITIONAL BRICK & STONE;
TIGRA MULTI

SANDTOFT CALDERDALE ROOF TILES,
COLOUR; DARK GREY, WITH
TERRACOTTA RED COLOURED RIDGES

BRICKWORK BELOW DPC LEVEL
TO BE, DARK GREY ENGINEERING

WINDOWS; CREAM U-PVC
STYLE AS INDICATED ON DRAWINGS

BLACK SOFFITS AND FASCIAS

BLACK PVC-U RAINWATER GOODS

BLACK CEDRAL WEATHERBOARDING

0 1 2 5 10
Scale 1:100

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PROJECT
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CLIENT
Mr & Mrs DRURY

TITLE
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116 P02

SCALE	DATE	REV
1:100 @ A1	AUG 2025	